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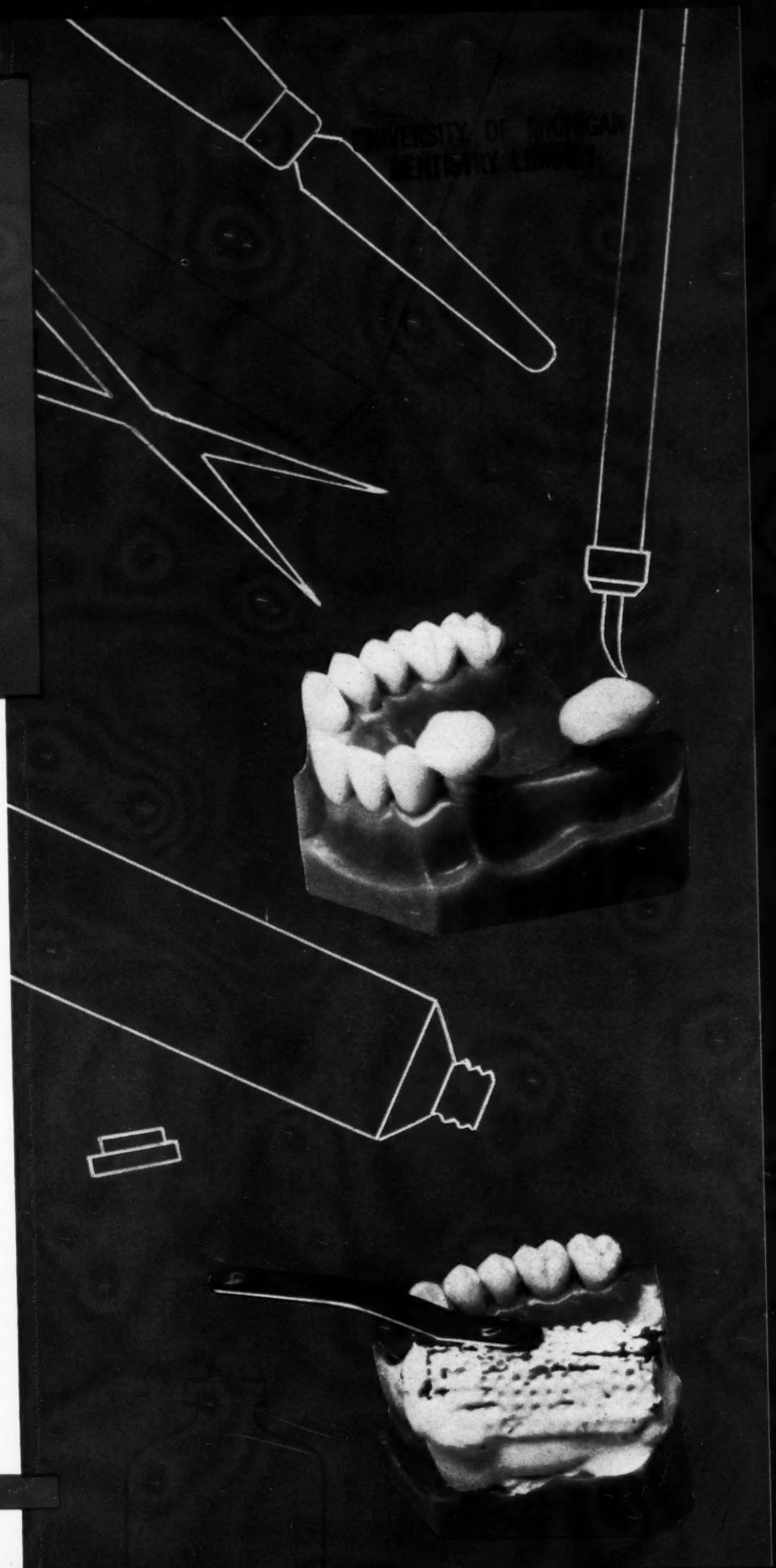

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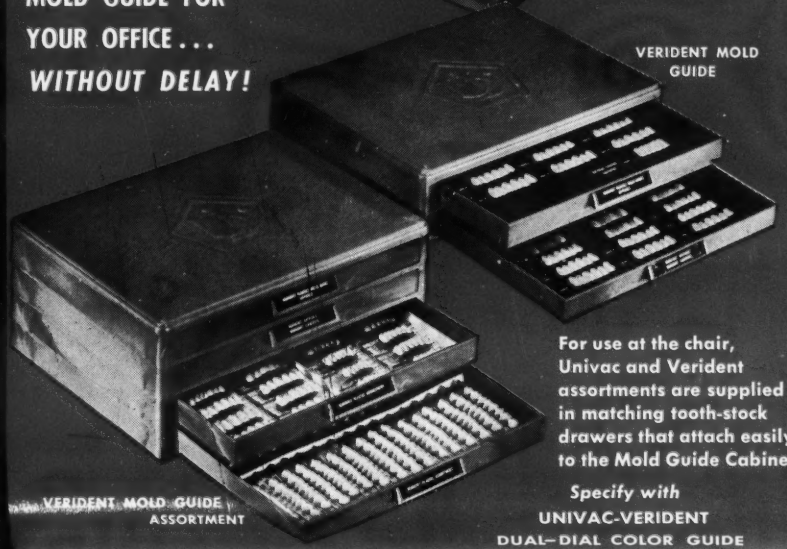

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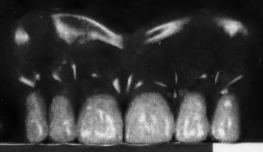

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COYL B. THOMAS, D.D.S. (St. Louis University, School of Dentistry, 1929) continues the presentation of his four-part article, FIXED BRIDGE ASSEMBLED IN THE MOUTH. Part Two appears in the current issue.

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Correction of POSTERIOR UNILATERAL CROSS BITE *by the General Practitioner*

CLARENCE L. BERGMANN, B.A., D.D.S., Watertown, Wisconsin

DIGEST

In the general practice of dentistry, many children are seen who need orthodontic treatment. Where complete orthodontic treatment is necessary, these patients should be referred to an orthodontist. Many simple cases, however, can be treated by the general practitioner. This article discusses some of the simple cases that can be handled in general practice and presents the step-by-step technique used in each case.

Causes and Related Factors

Cross bites in the posterior region are common. They are attributed to many factors, such as leaning habits, tongue positions, and ectopic eruption. The tongue, positioned in the palate, can create such excessive force that all the maxillary teeth will lie fully buccal to the mandibular teeth. If held within the mandibular arch, it will cause an overexpansion of that arch placing the mandibular bicuspids and molars buccal to the maxillary molars.

Normal Development May be Restricted—Leaning habits exemplified by resting the face upon the knuckles of one fist while reading or occupied otherwise, have been reported to restrict the normal attainment of maxillary denture width, thus producing a cross bite.

Serious Problem May be Created—The cross bite in the buccal area is serious because if allowed to continue it will interfere with normal development processes and create a more serious problem. Buccal cross bite of deciduous molars is not as serious as in the case of the permanent teeth because the interval of time between loss of the deciduous teeth and the cuspal interlocking of the permanent bicuspids and molars permits recovery.

Early Attention Recommended — Cross bites of the bicuspids and permanent molars will not correct themselves and must be given attention as soon as discovered. It is not recommended that the general practitioner undertake the correction of extensive cross bite conditions, but he can render a useful service by correcting the simpler and more common cases.

Case One

A boy sixteen years of age complained that the second left mandibular molar was in lingual version and that it was annoying to his tongue. There was no evidence of inflammation or soreness to the tongue.

Examination of the mandibular arch revealed that the one posterior area showed a tendency to lingual version (Fig. 1). While studying or relaxing, the patient rested his face upon the knuckles of his right hand (Fig. 2.)

Treatment Problem — This case should have been referred to an orthodontist for complete treatment, but the family was only interested in the correction of the second left mandibular molar.

Proposed Solution—The simplest method would have been to extract the left second mandibular molar. Upon eruption of the third mandibular molar, however, the anterior component of force would cause the third mandibular molar to move into this space. The normal stress of occlusion would not be in the direction of the long axis of the tooth. There would also be an abnormal contact point or even an open contact which could cause food impactions. Also the contact points of the left mandibular bicuspids and molars could open. This area could be susceptible to periodontal disease.

For the greatest service to the patient, it was advisable to move the tooth into occlusion. The following steps were taken:

1. An alginate impression was taken of the maxillary and mandibular teeth. In this case a copper band compound impression was taken of the second mandibular molar. Any other type of impression material could be used. Stone models were made.

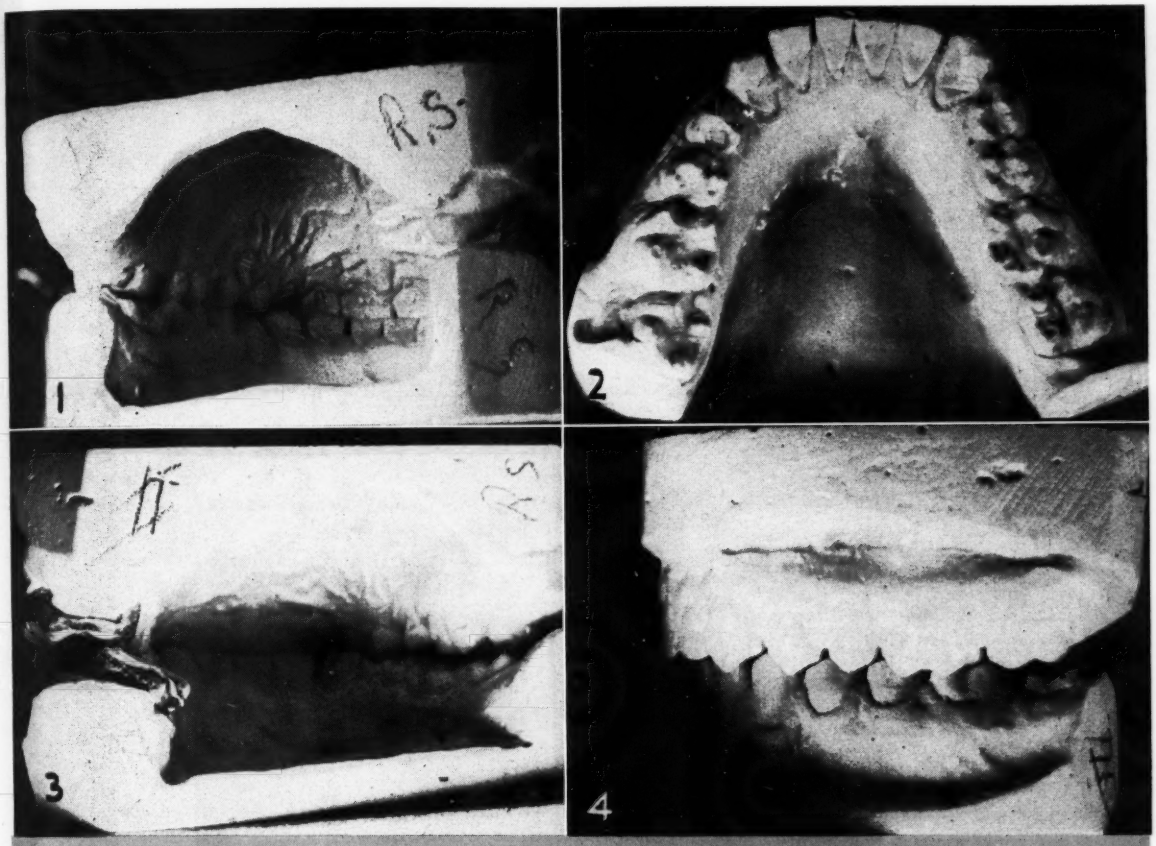
2. Molar bands were constructed for the maxillary left second molar and the left mandibular molar. These bands were constructed from Chrome-Nickel Alloy .005 by ¼ inch. Bands can be made of other materials such as precious metals or stainless steel.

3. Preformed cylindrical bands can be fitted and festooned or the pinched-band technique can be used.

4. A coil type hook was attached to the lingual of the mandibular band and the buccal of the maxillary band.

5. The coil type hooks are placed with the opening to the anterior of the mouth. In this way, the lingual hooks are not as annoying to the tongue as a regular straight type hook, pointing gingivally. Through-the-bite traction was then used (Fig. 3).

6. A Number 6 rubber ligature was used first from the lingual of the left



1.
The posterior lingual aspect of the study models illustrating the left second mandibular molar in complete lingual version.

2.
The occlusal of the mandibular cast illustrates the right posterior area in slight lingual version and the left second molar in complete lingual version.

3.
The working model shows the molar bands and the rubber ligatures in through-the-bite position.

4.
Models were made when the molar bands were removed and the mandibular second molar over-corrected and not in occlusion.

second mandibular molar to the buccal of the left second maxillary molar.

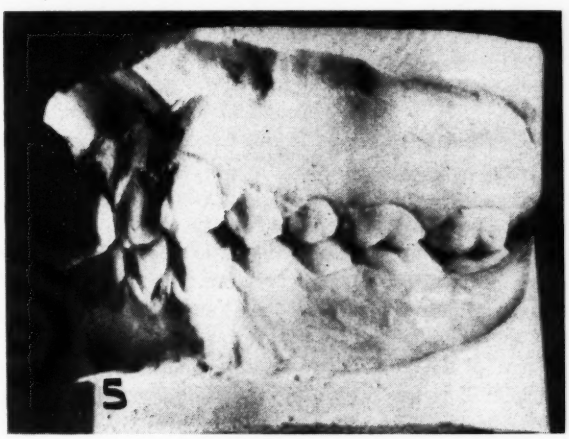
7. As the treatment progressed, the size of the rubber ligature was decreased. The rubber ligature should be small enough to maintain tension when the jaws are closed or at rest. The rubber ligatures are worn twenty-four hours a day and replaced every twenty-four hours.

Observation Continued — The patient is given an ample supply of bands and instructed to keep several with him for replacement in case of breakage.

The patient is seen weekly.

The crossbite must be overcorrected, that is, carried to a cusp-to-cusp relationship in the opposite direction.

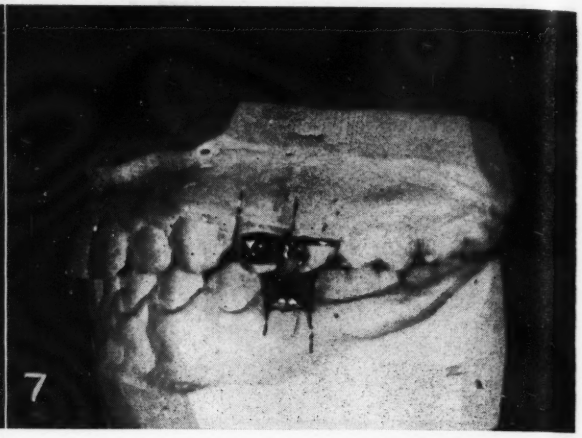
Figure 4 shows the models after the bands were removed after five months of treatment. The second molars are not in occlusion. A picture taken after six months shows the second molars in occlusion (Fig. 5).



5.
Models made eleven months after start of treatment. Shows the left second molars in occlusion.

Conclusions — Although complete orthodontic treatment was not done, the patient now has these molars in normal occlusion. If the left second mandibular molar had been extracted,

6.
The left side of the study model shows the second mandibular bicuspid in lingual version.



7.
The working model with bicuspid bands and rubber ligature in position.

he would have been a dental cripple for life at the age of sixteen.

Case Two

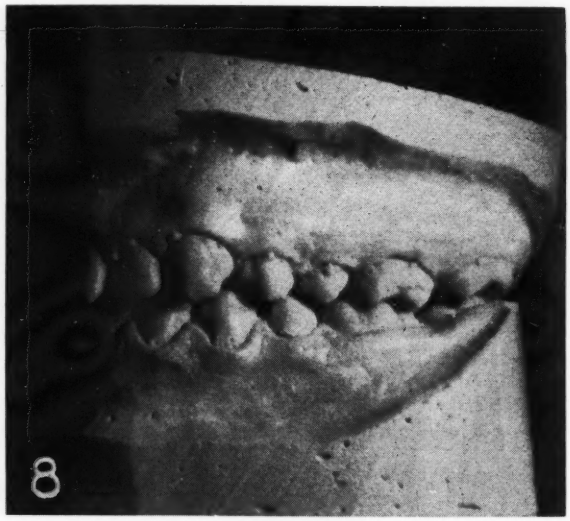
The patient in this case was a boy thirteen years of age with the left second mandibular bicuspid in lingual version. The space for this bicuspid had closed approximately one millimeter. If this condition had not been corrected, the anterior component force of occlusion would cause this tooth to continue to drift toward the lingual. As this space continued to close, it would require complete orthodontic treatment to open the space and move the tooth into position. If this were not done there would be an early loss of this tooth (Fig. 6).

Treatment—The following steps were taken:

1. Chrome-Nickel Alloy bands were constructed for the left first maxillary bicuspid and the left second mandibular bicuspid. The band material used was .004 by 3/16 inches.

2. A buccal extension of 21-gauge (.028) wire material was fastened to the buccal surface of the maxillary band, extending the length of the left second maxillary bicuspid. This was done to prevent movement of the maxillary bicuspids.

3. A coil type hook was attached to the buccal of the maxillary band toward the distal, extending to the buccal surface of the second bicuspid. A coil type hook was also attached to the lingual of the mandibular band.



8.
Models were made at the time the bands were removed after four months of treatment with the mandibular second bicuspid in occlusion.

Through-the-bite traction was also used in this case. Figure 7 shows the working model.

4. A Number 4 rubber ligature was used first from the lingual of the mandibular band to the buccal of the maxillary band. Later this was decreased to a Number 3 ligature.

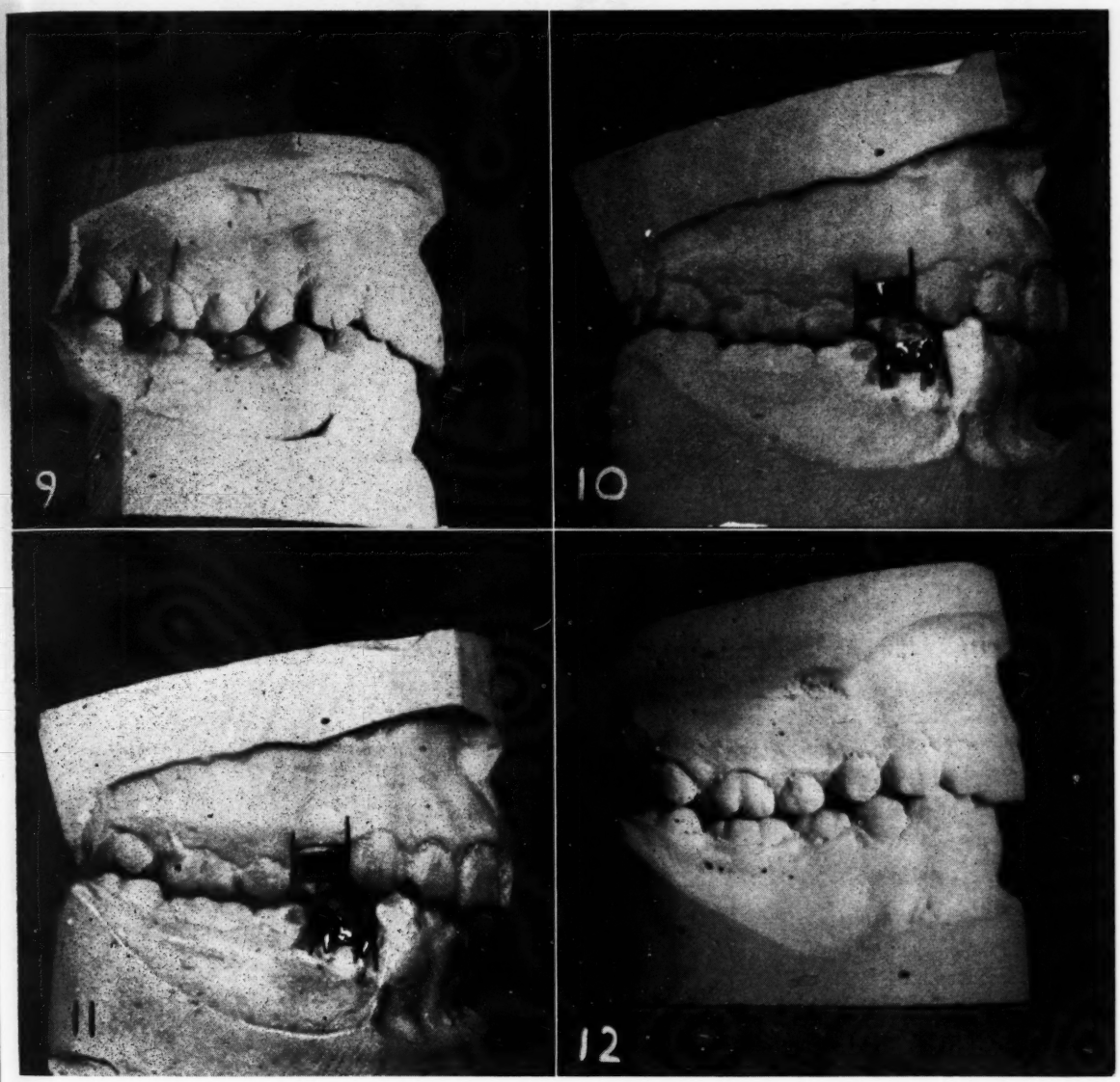
5. If greater expansion had been necessary in the mandibular area this method could not have been used. Figure 8 shows the models of the mouth with the bands removed after four months of treatment.

Conclusions—There was no noticeable change in the mandibular anterior teeth.

By making this correction at this time, future orthodontic treatment is unnecessary. If this tooth had been lost, the left mandibular molars would have moved mesially and the first bicuspid drifted slightly distal. The force of occlusion then would not be in the direction of the long axis of the left posterior mandibular teeth. This condition could cause an early loss of these teeth. By making this correction the patient has a good functional occlusion.

Case Three

In a fourteen-year-old girl the right maxillary first bicuspid was in lingual version. From the point of view of the patient and the parents the problem was only that of esthetics (Fig. 9).



9.
These study models show the right maxillary first bicuspid in lingual version.

10.
Bicuspid bands in position with a double-hook attachment.

11.
Bicuspid bands in position with a double-hook attachment and double rubber ligatures.

12.
The lateral view of the completed case after six weeks of treatment, with bicuspids in occlusion.

Treatment—In this case, the pinch type band was used. The following steps were taken:

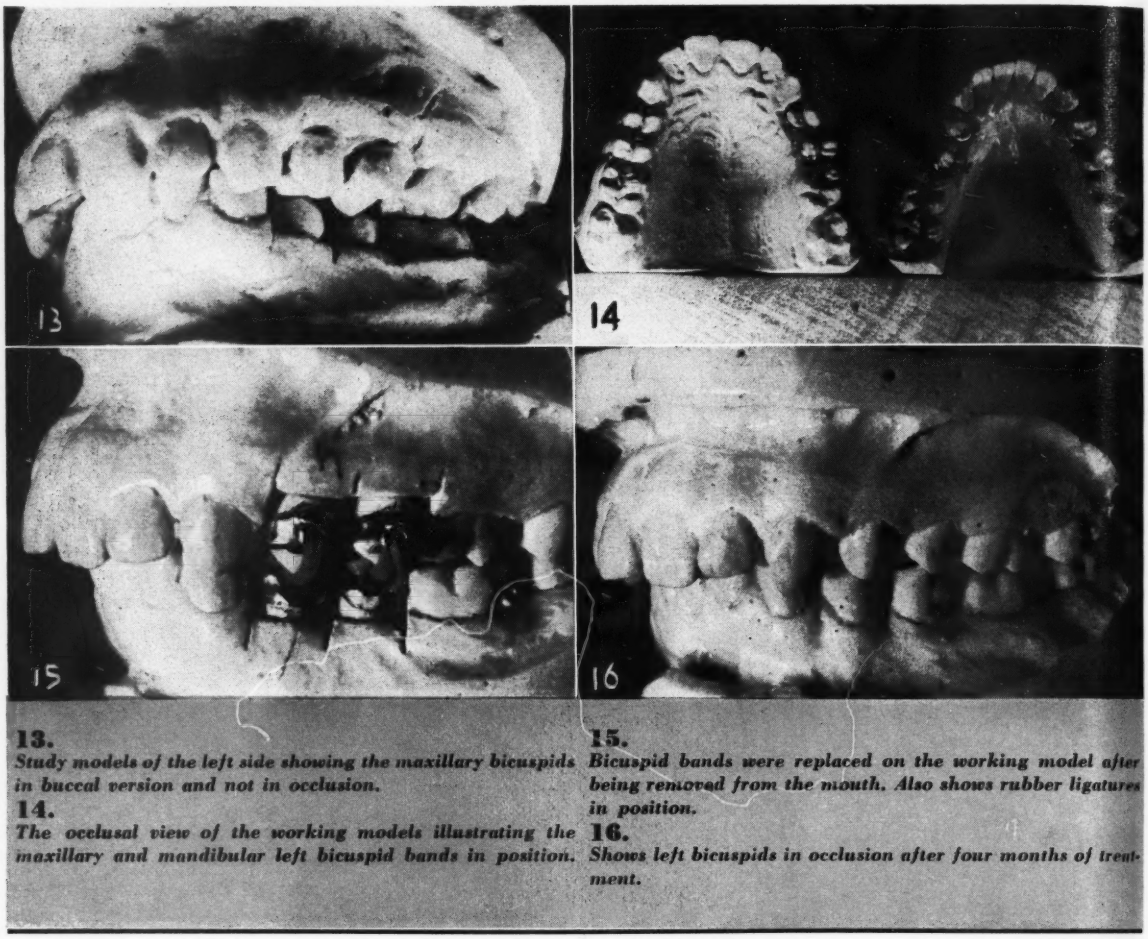
1. Stainless steel band material, .125 by .004 inch, was adapted to the maxillary and mandibular first right bicuspids. To secure a snug fit, the bands should be burnished well on the other surfaces but pinched on the buccal surface.

2. After the band was fitted, it was removed from the tooth and soldered or spot welded. 8K solder was used with the stainless steel. Precious metal could also be used in place of stainless steel.

3. On the buccal surface of the first bicuspid mandibular band, a 21-gauge wire was soldered horizontally. Both ends of the wire were bent gingivally. This gave a double hook attachment (Fig. 10).

4. In the same way, a 21-gauge wire was attached to the lingual surface of the maxillary first bicuspid band, again forming a double hook. The double type hooks can be used for double ligation.

5. A rubber ligature was attached to the buccal distal hook of the first mandibular bicuspid and to the lingual distal hook of the first maxillary bicuspid, and also from the buccal



13.
Study models of the left side showing the maxillary bicuspids in buccal version and not in occlusion.

14.
The occlusal view of the working models illustrating the maxillary and mandibular left bicuspid bands in position.

15.
Bicuspid bands were replaced on the working model after being removed from the mouth. Also shows rubber ligatures in position.

16.
Shows left bicuspids in occlusion after four months of treatment.

mesial hook of the first mandibular bicuspid to the mesial lingual hook of the first maxillary bicuspid.

6. A Number 4 rubber ligature was first used and later reduced to a Number 3. When a double ligature is used, the bands have to fit the teeth snugly otherwise they will rapidly loosen (Fig. 11).

7. Four weeks later, the maxillary first bicuspid had moved buccally into occlusion. A Number 3 rubber ligature was then extended from the buccal distal hook of the mandibular to the lingual mesial hook of the maxillary first bicuspid. In this way, the mesial of the maxillary first bicuspid was turned bucally and rotated distally. This was accomplished in two weeks.

Figure 12 shows models of the completed case after six weeks of treatment. The maxillary first bicuspid is now in functional occlusion.

Conclusions—The patient is no longer self-conscious of the maxillary first bicuspid and, in smiling or laughing, does not attempt to conceal the area. Correction improved not only her appearance but her personality as well.

Case Four

A girl fourteen years of age in need of complete orthodontic treatment was referred to an orthodontist. The parents were only interested, however, in the correction of the maxillary and mandibular left bicuspids. The maxillary left bicuspids were in buccoversion and not in occlusion. The mandibular bicuspids were tipped slightly lingual (Fig. 13).

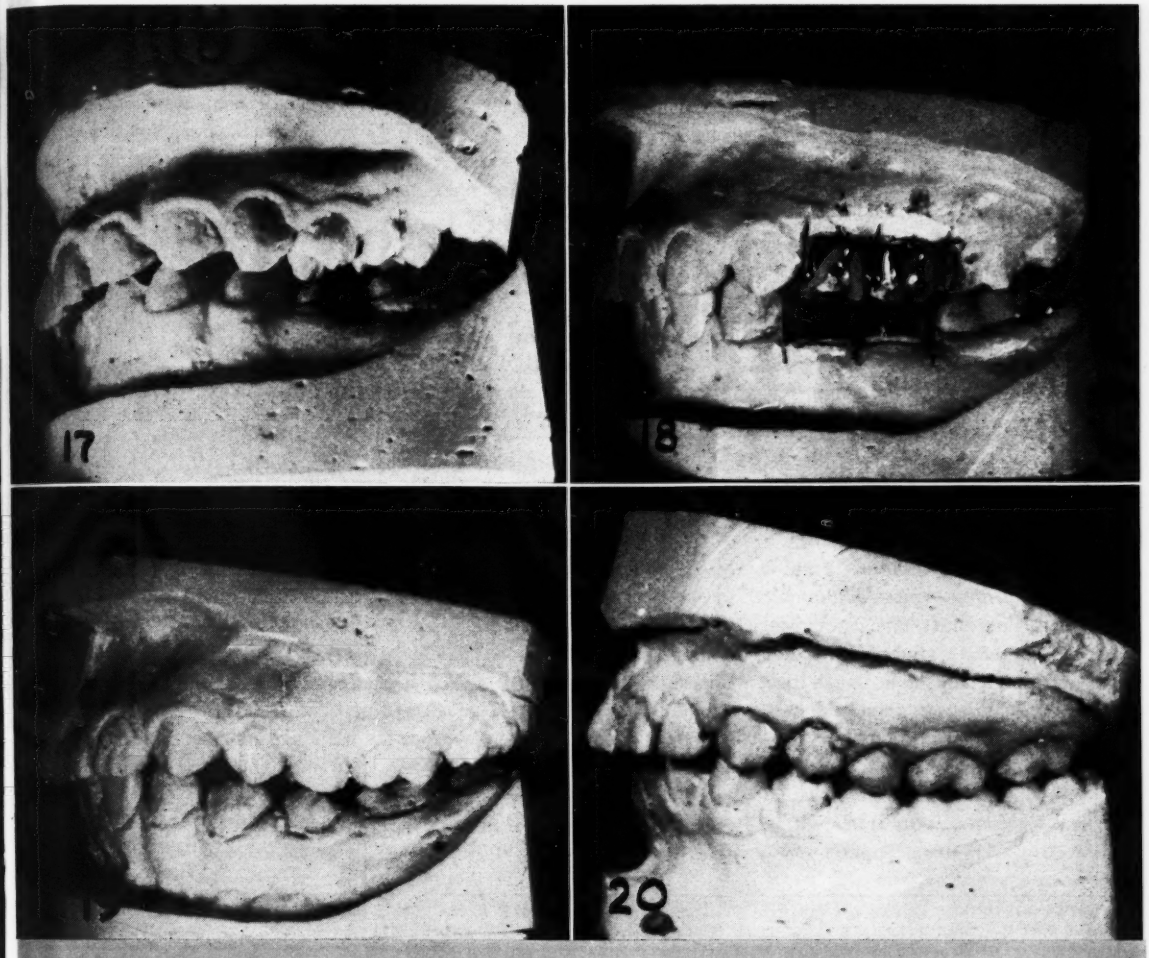
Treatment — Bicuspid bands were constructed from Chrome-Nickel Alloy .004 by 3/16-inch band material. The following corrections were made:

1. A coil type hook was attached to the lingual of the mandibular bands and the buccal of the maxillary bands (Fig. 14). The wire for the coil type hooks used was 22-gauge (.025) wire of Chrome-Nickel Alloy.

2. Through-the-bite traction was applied. Figure 15 shows the working models.

3. A Number 4 rubber ligature was used from the lingual of the left mandibular bicuspids to the buccal of the left maxillary bicuspids. The bands were constructed on these models. After the bands were removed from the mouth, they were replaced on the models. Figure 15 also shows the rubber ligature in position. As the treatment progressed, a Number 3 rubber ligature was used.

Conclusions—The models in Figure 16 were made four months after treatment began. At that time the bands were removed. The interproximal spaces evident between the teeth will eventually close. The bicuspids are in functional occlusion. This will definitely prolong the life of these teeth.



17.
Study model showing left maxillary bicuspids in buccal version and the slight rotation of the right central.

18.
The bicuspid pinched bands and rubber ligatures in position.

19.
After nine weeks of treatment the bands were removed and the left bicuspids were in a cusp-to-cusp relation.

20.
Models were made five months after treatment began with left posterior teeth in occlusion.

It has also improved the appearance of the patient.

Examination—After three years the teeth in this case settled into a final position similar to that shown in Figure 16. Although there is still a slight malocclusion in this mouth, good functional occlusion has been established.

Case Five

The patient in this case, a boy of ten years of age, had an early eruption of the second dentition. Complete orthodontic treatment was necessary in this mouth, but there are occasions when this is not possible.

Treatment—The distal of the maxillary right central was rotated labially. The left maxillary first and second bicuspids were in buccoversion. As complete orthodontic treatment was not available for this patient, the question was correction of the anterior portion of the maxilla or of the left posterior portion. It was decided that it would be of more value to the patient to bring the maxillary bicuspids into occlusion (Fig. 17). The following steps were taken:

1. The pinch type band, stainless steel (.125 by .004) was adapted to the left maxillary and mandibular bicuspids.

2. A 21-gauge wire was soldered to the buccal of the maxillary bicuspids and bent to form a hook, pointing gingivally.

3. To the lingual surface of the mandibular bicuspid bands, the same type of hook was formed. Rubber ligature Number 4 was extended from the lingual mandibular hooks to the buccal maxillary (Fig. 18).

4. After nine weeks, the bands were removed and the bicuspids allowed to settle into position (Fig. 19).

5. Five months later, the patient was examined again. All the posterior teeth on the left side were in good functional occlusion (Fig. 20).

Conclusion — Although complete orthodontic treatment was not possible in this case, the patient's left

maxillary bicuspids and molars were returned to functional occlusion. Some preventive effects were also accomplished.

Summary

This article describes one type of simple orthodontic correction that can be made by the general practitioner. Bilateral posterior cross bites can be corrected the same way. Other types of simple corrections can also be done.

The primary concern of the cases illustrated was improvement of the occlusion. For various reasons no complete orthodontic treatment was possible. Improvement was, therefore, the desired result.

Many comprehensive surveys provide evidence that a large percentage of children suffer from irregularities of the teeth. The general practitioner is the first to see the orthodontic problem. It is his responsibility to correct the simple irregularities and make arrangement for complete orthodontic treatment.

205 *Third Street*

Passage of Tissue Fluid Into Gingival Pockets

NIELS BRILL and HILDING BJORN

Summary

Twelve persons received 2 to 4 grams of fluorescein sodium per mouth. Two hours later it was possible to recover fluorescent fluid from most gingival pockets. In 5 persons fluorescent material was recovered from the depth of nostrils. Exudate containing fluorescein was found regardless of whether these epithelia were inflamed or not. However, it was apparent that inflamed nasal and pocket epithelium yielded greater amounts of fluorescent fluid than did healthy epithelia. With the exception of pocket epithelium it could not be demonstrated that oral epithelia allow fluorescein to pass. Secretory products from salivary glands, mucinous glands of the hard palate and sudoriferous glands of the upper lip, nose, and forehead did not contain detectable amount of fluorescein.

Comment

It is noted that the outgoing stream of fluid coming from gingival pockets may have a cleansing effect in that it may carry minute particles out of the pockets and by streaming out the impact of the fluid may block the entrance to the pockets.

Adapted from *Acta Odontologica Scandinavica* **17**:18 (May) 1959.

ANNOUNCEMENT OF BOOKS RECEIVED

PRACTICAL ORAL SURGERY, By Henry B. Clark, Jr., M.D., D.D.S., Second Edition, Philadelphia, Lea & Febiger, 1959. Price $9.50.

EFFECTIVE DENTAL ASSISTING, By L. H. Schwarzrock, D.D.S., and Shirley Schwarzrock, B.S., M.A., Second Edition, Dubuque, Iowa, Wm. C. Brown Company, 1959. Price $8.00.

PARTIAL DENTURES, By John Osborne, Ph.D., M.D.S., F.D.S., and George Alexander Lammie, Ph.D., M.D.S., H.D.D., Second Edition, Springfield, Illinois, Charles C Thomas, 1959. Price $10.50.

PROCEEDINGS OF A WORKSHOP FOR TEACHERS IN PERIODONTOLOGY, Edited by Harold G. Ray, D.D.S., M.S., San Francisco, The American Academy of Periodontology, 1959.

OCCLUSAL EQUILIBRATION AND TEMPOROMANDIBULAR JOINT DYSFUNCTION, By Nathan Allen Shore, D.D.S., Philadelphia, J. B. Lippincott Company, 1959. Price $12.50.

HIGH SPEED AND ULTRA SPEED IN DENTISTRY, By Harold C. Kilpatrick, D.D.S., Philadelphia, W. B. Saunders Company, 1959. Price $8.50.

A SYNOPOSIS OF PHARMACOLOGY WITH SPECIAL APPLICATION TO DENTISTRY, By V. C. Sutherland, Ph.D., Philadelphia, W. B. Saunders Company, 1959. Price $4.00.

RATIONALIZED ROOT CANAL TREATMENT, By Ang. G. Sargenti, D.M.D., and Samuel L. Richter, D.M.D., Switzerland, AGSA, 1959.

IN THE DENTIST'S OFFICE, By G. Archanna Morrison, Second Edition, Philadelphia, J. B. Lippincott Company, 1959. Price $7.50.

FIXED BRIDGES

Assembled in the Mouth—Part Two

COYL B. THOMAS, D.D.S., Lebanon, Missouri

DIGEST

This is the second in a series of four articles describing a technique for constructing fixed bridges. In this installment the author describes the method of finishing the three-quarter crown to be used as an abutment and presents step-by-step directions for placing a section of the bridge.

Steps in Second Procedure

After the crown and beam composing the section of the bridge is cast the next step is to wax up the three-quarter crown:

1. A piece of matrix metal bent around the approximating tooth and lubricated may be an aid in starting the wax-up (Fig. 11). This may not be necessary, however, since the approximating tooth can be removed entirely.

2. After the three-quarter crown is waxed, adapt plastic backings (see Figure 23) to the facings and wax backings to the three-quarter crown pattern.

3. Form wax pontic around three sides of beam-top, buccal, and lingual, in such a manner that the crown pattern and pontics may be withdrawn from the three-quarter preparation and beam in one piece, invested, and cast. Figure 12 shows wax-up with facings in place and the approximating lateral removed. Figure 13 shows the wax-up with the facings off. Figure 14 shows this section cast and as yet not polished.

Section of Bridge Placed in Position—1. This section is polished and placed in position on the three-quarter abutment and beam and held securely in place with thumb pressure while drilling the first hole directly through the backing, beam, and lingual side of bridge.

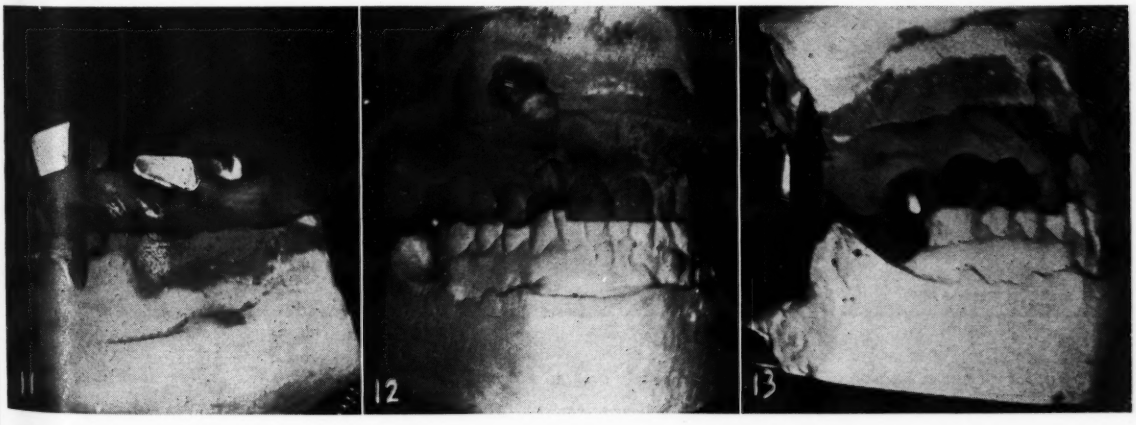
2. Continuing the pressure to hold the sections in place the hole is reamed with a machine taper reamer. Both the drill (a bi-bevel drill works best) and the reamer may be used in the straight handpiece (Fig. 15).

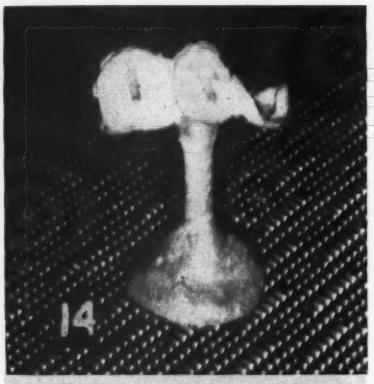
3. A machine taper pin is carried to the hole with a pair of locking pliers having a groove in the beaks (Fig. 16). This pin is forced to a tight fit and a second hole is drilled, tapered, and the pin inserted into it. The bridge will now appear as shown in Figure 17.

4. The ends of the pins protruding from the buccal side of the bridge are ground smooth with the backing so that the facings may be placed over them (Fig. 18).

5. After placing the facings the ends of the pins protruding from the lingual side are shortened so that a minimum of finishing will be required when the bridge is inserted in the mouth. Figure 19 shows how the lingual will appear before the bridge is placed in the mouth.

11.
Crown-beam in place. Three-quarter crown waxed, matrix metal in place.
12.
The bridge waxed, facings in place and approximating tooth removed.
13.
Bridge waxed, facings off.





14.
Bridge cast, untouched.

Temporary Crowns Removed—1. The temporary crowns (as shown in Figure 20) which had been placed after the impressions had been made of the mouth following the preparation of the abutments, are removed.

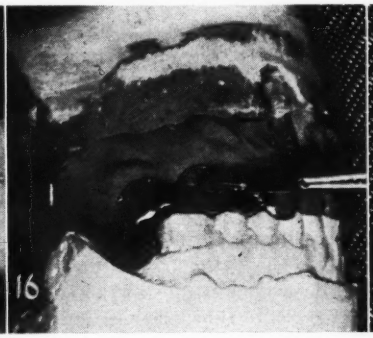
2. A sufficient amount of cement for both crowns is mixed, the molar crown and beam seated, the second section placed in position, and the pins inserted.

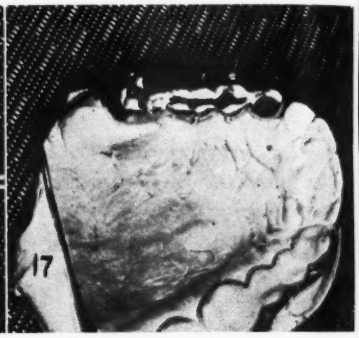
3. The backings are cemented in place.

4. After the cement is set the small amount of the ends of the pins protruding from the lingual are ground and polished smooth with the lingual portion of the bridge. Figure 21 shows the bridge in place with mouth closed and Figure 22 shows the bridge with the mouth open.

Armamentarium for Pin Bridge Technique

This is shown in Figure 23. Reading left to right: the bi-bevel drill, machine taper reamer; the center top is a piece of aluminum which has two holes drilled and reamed. Wax is melted into the holes and pieces of paper clips warmed and inserted into the holes. These will be removed and





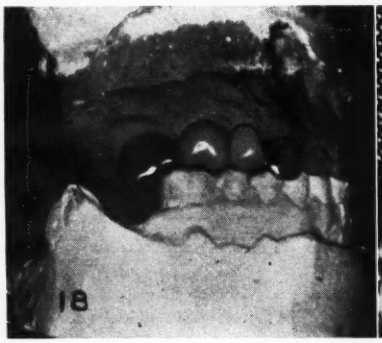
15.
Tapering hole in bridge.

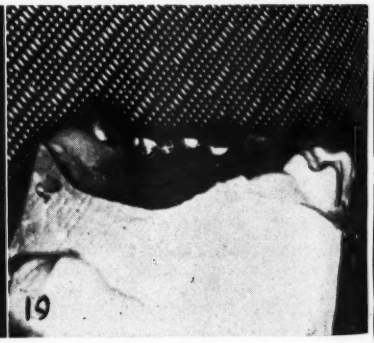
16.
Placing pin bridge on cast.

17.
Bridge assembled with pins, on cast.

18.
Finishing bridge on cast closed.

19.
Lingual bridge on cast.

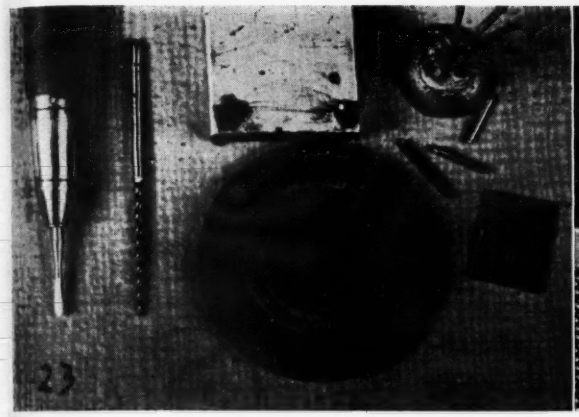




20.
Temporary crowns shown with mouth open.

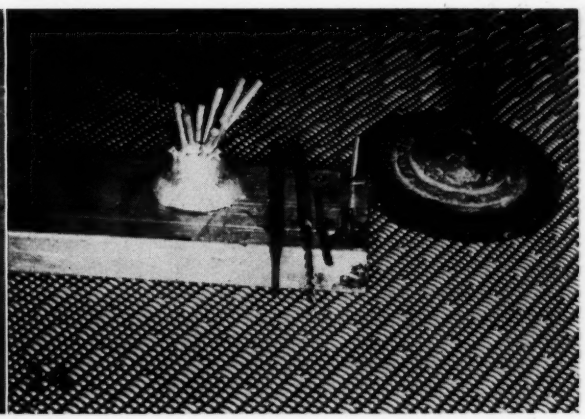
21.
Finished bridge shown with mouth closed.

22.
Finished bridge, mouth open.



23.
Handpiece with bi-bevel drills, taper drill. Aluminum bar with wax patterns in place. Pin patterns, sprued, pins cast, pins cut off casting, plastic backing pattern.

placed in a sprue former to cast the taper pins.



24.
Shows aluminum bar with wax patterns in tapered holes. Wax patterns for pins sprued, pins cast, drill, taper drill.

Figure 24—Another view of the aluminum bar with the cast pins, bi-bevel drill, taper reamer, paper clips waxed in the holes in the bar, one removed and lying on the bar. The wax patterns sprued to cast more taper pins are shown at the extreme right.

(End of Part Two)

125*A West Commercial*

Edema Incident to Surgical Procedures

IRVING INNERFELD, M.D., New York

Due to their activity in eliminating inflammatory sequelae, buccally given proteases have proved a useful adjunct to surgery, both therapeutically and prophylactically. Reduced edema, induration, and inflammation permit better approximation of tissue, less scar formation, faster healing, and less pain and discomfort for the patient. Buccally given streptokinase has been used as an adjunct in dental surgery, mouth and face surgery, emergency craniectomy, amputation of gangrenous toes, diabetes mellitus, and surgical treatment of pilonidal cysts.

Study Undertaken

A study of 62 patients, 49 treated with buccally given streptokinase and 13 controls, ranging in age from 12 to 67 years, has revealed the effectiveness of this treatment in inflammation resulting from removal of impactions, apicoectomy, apicocurettage, multiple extractions, and predental surgery. Patients were observed postoperatively for intervals of 24, 48, and 72 hours.

Dosage—The patients to be treated were given tablets in the dosage of 20,000 units, of streptokinase to be taken every four hours.

Results Obtained—1. At 24 hours, 5 of the 49 patients treated with streptokinase showed moderate edema, while 11 of the 13 controls showed moderate to severe edema.

2. At 48 to 72 hours postoperatively, only 9 of the 49 patients treated with streptokinase showed more than slight edema and 1 patient complained of severe pain accompanied by minimal edema.

Ten of the 13 controls showed considerably prolonged edema at the same period, while 2 who had only slight pain and edema without trismus at 4 hours showed good healing by 48 hours.

4. Two controls who had severe inflammatory effects were given streptokinase and showed exceptional recovery within 24 hours.

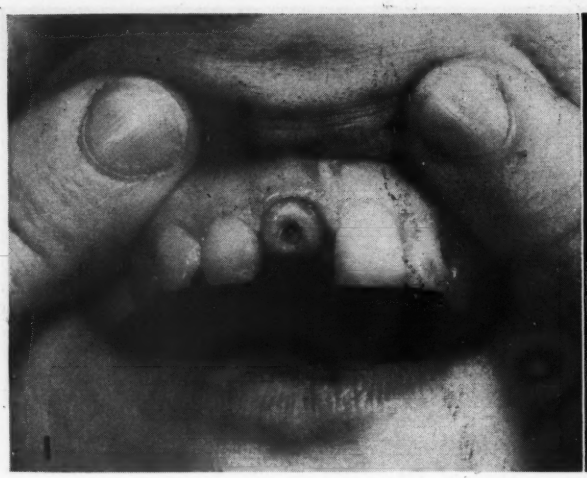
Treatment in Special Cases—The streptokinase-treated group included a woman who was in the seventh month of pregnancy, a hemophiliac, two diabetics, two patients with a history of rheumatic fever, one with hypertension, one with syphilis, one with chronic arthritis, and four patients with allergies. No side-effects or toxicity were noted in these cases.

Decrease of Edema—After the removal of a carcinoma from the floor of the mouth, the patient received streptokinase buccally with excellent results. In another patient streptokinase was administered buccally for three days after the resection of the lower lip. Immediately postoperatively a minimal amount of edema was present, which disappeared in 24 hours.

Effective Use

Prophylactic use of buccally given proteases to prevent edema and inflammatory developments is a promising new application. It has been effective when used prior to eye enucleation, to dental surgical procedures, and to craniectomy for brain surgery.

Adapted from *Journal of the American Medical Association* **170**:101 (June 20) 1959.



VENEER CROWN

with Post for Nonvital Root

HAROLD P. ROSE, D.M.D.,* Northport, New York

DIGEST

Two of the common causes of failure in replacing a fixed crown and post are looseness and retainers that are too short. A loose retainer may be caused by incorrect design, inadequate retention, and inaccuracy in fit. Too short retainers may be caused by overfilling the root canal, by not widening the canal sufficiently, and by not flaring the mouth of the canal. This article presents step-by-step directions for a practical technique in which these three difficulties are avoided.

*Veterans Administration Hospital, Northport, New York.

Acknowledgements: Photographs by Theodore Willers, Chief, Medical Illustration Laboratory, Veterans Administration Hospital, Northport, New York.

Laboratory work by John F. Roach, Jr., Dental Technician, Veterans Administration Hospital, Northport, New York.

Preparation

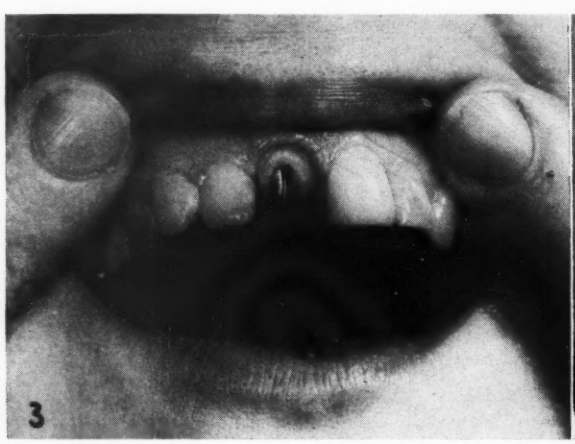
In preparing a root for a crown be certain that the canal can accomodate a post two-thirds of its length. This means that the canal must be wide enough to accept an accurate impression. The root must have a finishing line and be a millimeter and a half below the gingiva on the labial surface. A chamfer is preferred as the finishing line.

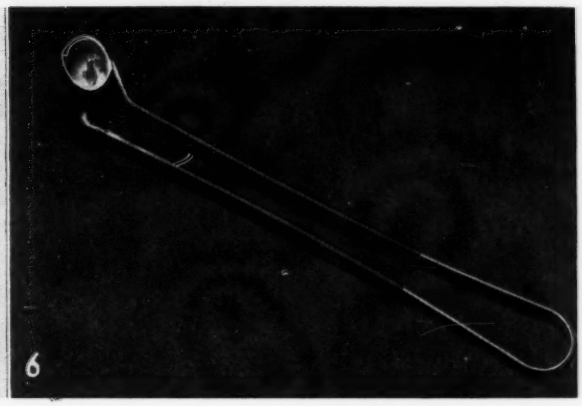
Procedure

Low heating compound is used in taking the impression. The following steps are completed:

1. A paper clip is ground down to fit the canal loosely and then bent on itself. Sufficient compound must be used so that it covers the entire clip as shown in Figures 3 and 4.

2. The copper band impression is taken as shown in Figure 5.





3. The impression is copper plated and a die is made.

The accuracy of the wax-up and the spruing are contained in the one clip. This is done to allow for support to the post and crown and for easier investing.

Steps Illustrated

The following figures show the steps in the technique:

Figure 1—The root with its preparation and its widened canal. The depth of the canal is also of importance. Frequently the length of the canal is not correctly estimated. This step should be completed with care.

Figure 2—The same preparation on a model for demonstration purposes.

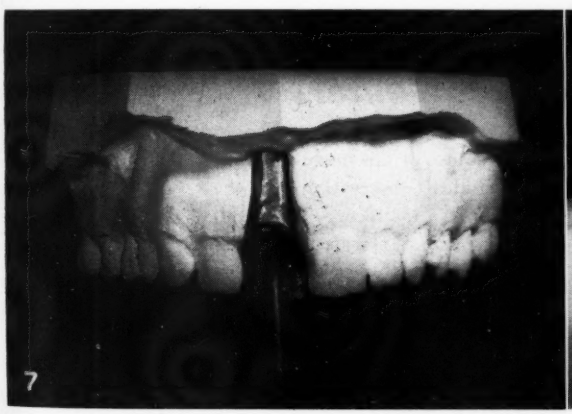
Figure 3—The indirect method of taking a copper band impression of the length and width of the canal. Note that the base for the compound is a sterilized paper clip bent on itself and slightly smaller than the length and narrower than the width.

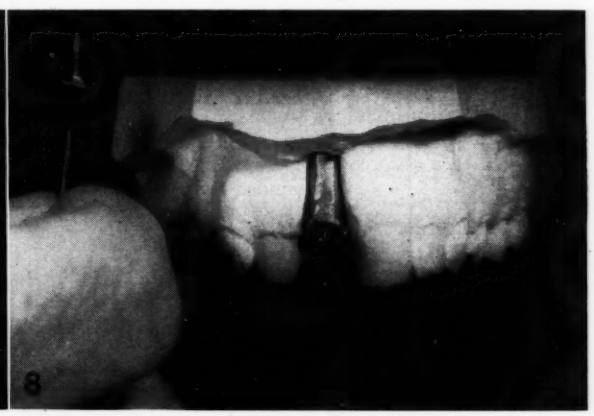
Figure 4—The impression as it is removed from the mouth. Note that the entire length and width of the clip are completely covered with an amount of compound.

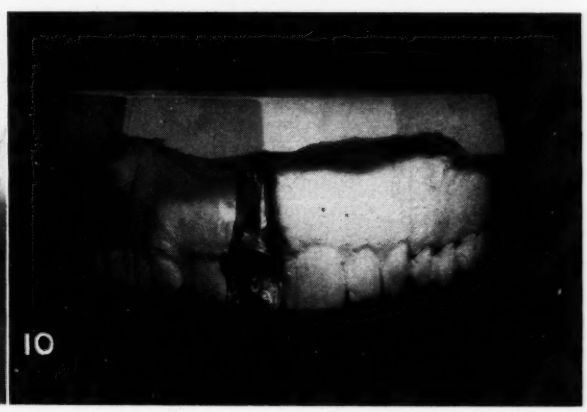
Figure 5—The copper band with its root canal dimensions.

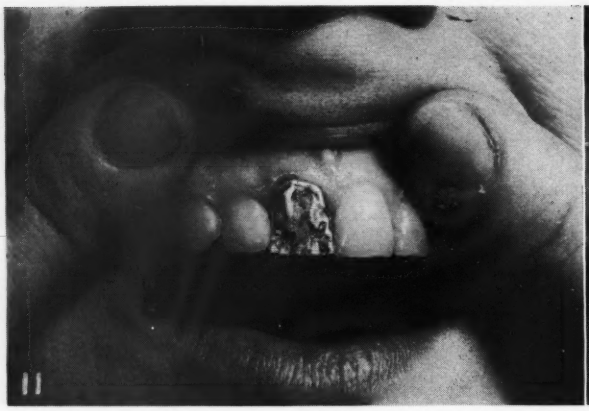
Figure 6—The impression being copper plated.

Figure 7—The die assembled and a









wax-up of the crown completed.

Figure 8—The wax-up is shown as it should appear just before investing.

Figure 9 — The wax-up in the mouth.

Figure 10—The casting on the die.

Figure 11—Casting in the mouth.

Figure 12—Finished crown.

Second Technique — A technique which may be used to relate the die on the model to the adjacent and opposing dentition is the following:

1. A paper clip is ground down to fit the canal loosely and bent on itself.
2. Inlay wax is used on the clip to take an impression of the canal.
3. This impression is placed in the canal and a plaster impression is taken.
4. The counter impression is taken with an alginate material and the bite is recorded in wax.

In the practical approach to the construction of a veneer crown with post for a nonvital root there are three main considerations: (1) the length of the canal should be about two thirds the length of the root. (2) The width of the canal should have a broad flare. (3) The post, apron, and veneer should be in one casting.

Veterans Administration Hospital, Northport, New York

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Since 1894 when DENTAL DIGEST was founded the pages of this journal have been open to articles contributed by dentists throughout the world. The emphasis has been, and will continue to be, on the publication of articles on all phases of clinical practice.

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* * *

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Edward J. Ryan, D.D.S.
Editor, DENTAL DIGEST
708 Church Street
Evanston, Illinois

The Emotional Basis of DENTOFACIAL DEVELOPMENT—*Part Two*

BERNARD J. GARN, D.D.S., New York

DIGEST

In this concluding installment of a two-part article the practical consequences of accepting the hypothesis developed in the first part are explored. If dentofacial structure is largely the result of emotional factors, diagnosis and treatment can only be meaningful and complete to the degree that these factors are understood. Although at present knowledge of the subject is limited there are many cases where an appreciation of the factors discussed can mean the difference between proper and improper treatment.

Modifying Factors

Emotions produce specific tensions in the muscles. Tensions in the muscles govern development of bone structure. That the resultant structure is recognizable is demonstrated by an innate knowledge of physiognomy. It would seem simple to measure facial features and determine what emotional factors produced these measurements.

If the total of the factors involved were as simple as that, physiognomy would have been placed on a scientific basis many centuries ago. Many factors are involved, however, which, while not detracting from the validity of the hypothesis presented serve to complicate the underlying emotions, the neuromuscular mechanism, and the resultant dentofacial structure.

These factors are the following:

1. *Inhibition*—In man, the muscular expression of emotion is constantly inhibited. However, the muscular pattern of inhibition when superimposed upon the original impressive pattern, produces a new pattern that can be recognized and evaluated. Inhibition is not a passive block, but a dynamic muscle force applied to counteract another dynamic muscle force. Thus an inhibited frown will differ from an inhibited smile, yet there are now four muscle patterns to express two emotions.

2. *Mimicry* — There is an automatic, unconscious tendency for human beings to assume facial expressions that imitate other persons. This can be observed especially in babies whose faces respond to every expression they see. The familiar cartoons of masters assuming the facial expression of their pets, and the sight of audiences responding facially to the expression of actors, are other examples of this principle. It is likely that the facial similarities observed in family groups, and many national traits of physiognomy result from mimicry.

3. *Cultural and Social Patterns*—The practised eye can often detect the country of origin of a person. It would seem reasonale to assume that the expressive countenance of Latin races and the mask-like visage of oriental peoples are respectively the products of different codes of behavior. Furthermore, the dissolution of racial characteristics in second generation Americans of varying backgrounds can be readily observed (Fig. 6).

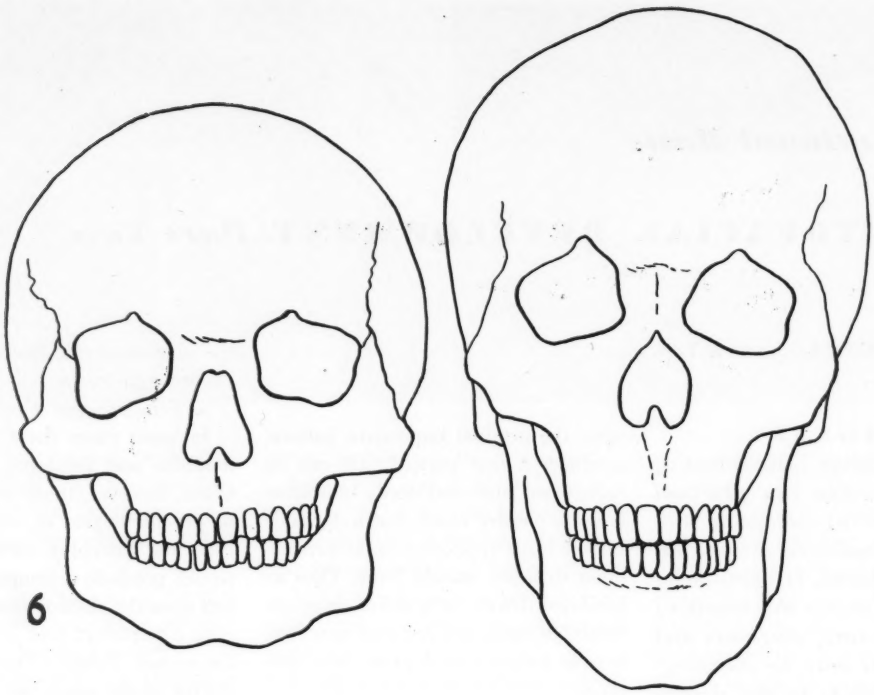
4. *Physiologic Considerations* — Assuming an identical set of conditions otherwise, the hormonal balance, blood chemistry, and every other physiologic aspect of the subject will produce modifications in the emotions, the neuromuscular patterns, and the resulting structure.

5. *Temperament Versus Character* —In some cases these may be harmonious and reinforce one another. Often, however, there will be a lesser or greater degree of conflict. In any case, the interplay between the two would preclude a simple, unified effect upon the physiognomy.

6. *Complexity and Change in the Emotional Tonus*—The face is the mirror of the mind, but the picture is no simpler or easier to read than the mind itself. Psychiatry is not an exact science, yet the trained psychiatrist can detect gross aberrations from the norm and the factors that produced them. In this case the analogy is a precise one. The face can never be easier to read than the mind which produced it, but conversely it is no harder. Just as the "demons" of previous centuries have been replaced by the neuroses and psychoses, so will "feelings" about character, as judged from the face, be replaced by measurable factors.

7. *The Effect of Muscles on the Emotions*—To this point, this article has been concerned with an analysis of the process that leads from emotion, through neuromuscular reaction to influence on structure. This process, however, is a reversible one: the muscles influence the emotions. One has to but smile muscularly and the corresponding emotion will appear in the mind.

Emotion Produced by Muscular Action: The Stanislavsky method of acting is based in large measure upon techniques of producing mental states by means of muscular actions. The Reichian school of psychiatry has carried the concept to its ultimate in treating mental illness by relaxing the



6.
Two skulls of European man showing the great variation of relative structure possible between members of the same race.

tensions in specific muscles. For example, fear of the father is relieved by relaxing stiff neck muscles.[17] Nor is this practice of treating the psyche by working on the "muscular armor" as far-fetched as it might first appear. The only successful pragmatic methods of treating psychoses thus far (metrazole, insulin, and electric shock) have as their end result the production of complete muscle relaxation.

Basic Principles in Therapy: The so-called "progressive relaxation" therapies work on the same principle. And many other examples can be found in such fields as yoga, physical medicine, osteopathy, chiropractic, and physical education. Moreover, when we "soothe a troubled brow" by stroking it, or feel resolute by "keeping a stiff upper lip," the emotions are influenced by control of the specific muscles involved.

Measurement Possible—Because of the action of these seven modifying factors, the resultant physiognomy is not as clearly defined or easily read as might be expected. The question arises: Do these factors so confuse the process that it becomes impossible to classify and measure features with any degree of scientific accuracy? The answer to this question is referred first to the *a priori* argument stated previously. If thousands of artists can delineate the physiognomy in word and line, assuredly modern science can measure it. Secondly, reference is made to the analogy between psychiatry and physiognomy.

Aid in Classification—When Erich Fromm says that there are several character "types" in which most people can be grouped he does not mean that a member of the "hoarding orientation" does not want to be loved, or that a member of the "receptive orientation" cannot be greedy, too. He is merely using the most salient features as a convenient aid in classification. His "opened mouthed" and "tight-lipped" observation may well be used as a starting point in a classification of character.

Diagnosis of Mild Cases Difficult—Diagnosis in psychiatry is much simpler in an extreme case of neurosis or psychosis than it is in a relatively normal person. Similarly, right-left photographs would be expected to show more delineation of character in neurotic than in normal persons. Fifty years ago Oppenheim and Bleuler determined that the upper and lower face were incongruous in psychotic persons.[18]

Sufficient evidence is available to answer the question in the affirmative, but a definite and valid answer will only be forthcoming when the proper criteria of study and measurements are discovered and applied.

Approaches to Further Study

Assuming that Napoleon was correct when he said "For brain work give me a man with a good allowance of nose," the first step in extended study would seem to be to acquire some large-nosed researchers. They might well deduce specific knowledge from the general premise by using the tools of electromyography, photography, and statistical analysis.

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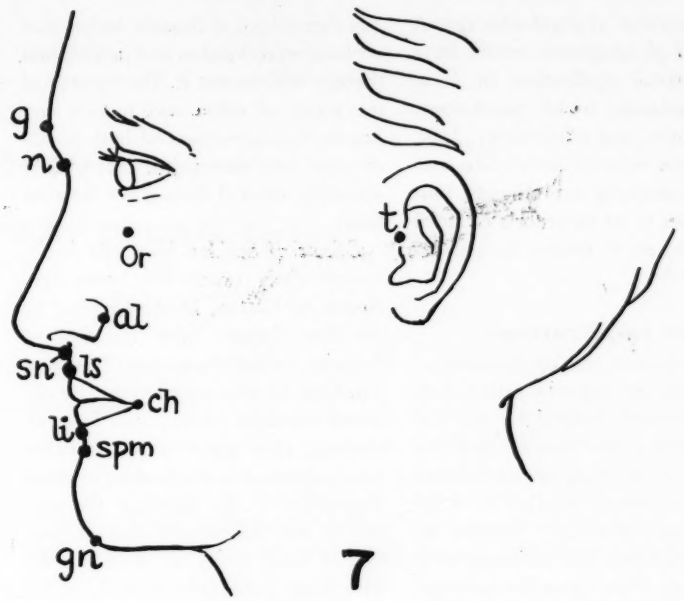
[17]Reich, W.: The Function of the Orgasm. New York, The Orgone Institute Press, 1948.
[18]Op. Cit. 6.



7.
Cephalometric measuring points. These have been selected on an anatomic basis. It will be necessary to determine new points of reference based upon the predictable effects of the muscular component of emotions.

Related Studies in Nerve Function—Electromyography has provided much interesting data on the action of muscles during mastication and deglutition in the study of Fifth nerve function by Prujansky,[19] and Moyers,[20] but the use of this device in Seventh nerve studies has so far not been as fruitful.[21] It should be possible soon, however, to acquire more exact data on the mimetic musculature, and particularly as these muscles relate to emotional states.

Effect of Specific Emotions on Bone Structure—Once the precise direction, intensity, and duration, of muscle forces in specific emotions have been determined it will be possible to predict what effect these will have on the developing bone structures. With the knowledge available it can be postulated that (1) chronic hostility will produce a tension in the masseter and a consequent bite-closure; (2) chronic fear will result in a hypertonicity of the platysma and consequent open-bite and orthognathism; and (3) longing (for affection) would be accompanied by parted lips and a hypertonicity of the tongue which would tend to develop a bimaxillary protrusion.

New Indexes Predicted—With a tremendous increase of knowledge in this field it will be possible to set up meaningful indexes of facial measurement. The indexes used up to now have been arbitrarily determined and, for these purposes are as valueless as the illustrations in physiognomic atlases of fifty years ago[22] (Fig. 7).

Science of Physiognomy Future Goal—After this, if profile, full face, lateral composite (right-left) and upper face and lower face photographs were made in mental institutions, penal institutions and other places where extremes of human character exist in a climate that would afford gratuitously the results of exhaustive psychologic testing, statistical analysis could be used to correlate the facial measurements with the psychologic data. If the premises outlined have been correct, these procedures should provide the fulfillment of one of mankind's oldest dreams, a real science of physiognomy.

Practical Implications

It is always difficult to assay the practical applications of knowledge. Nor are practical considerations the main reason for acquiring knowledge. There may be many unforeseen applications arising from this investigation, or there may be none. It is safe, however, to assume the following:

1. It should be possible to determine which emotional factors might be responsible for certain dysgnathias and enhance orthodontic treatment accordingly.

2. The various pressure factors responsible for periodontal breakdown might be more fully understood and methods acquired to deal with them.

3. It could be discovered that mouth breathing is an emotional or psychic state that produces changes in the lymphoid ring, the sinuses and nose, and the dental structures rather than vice versa as is now believed.

Application in Occlusion—In the study of occlusion, so fundamental to dentistry, emphasis on articulation and joint morphology is being discarded and considerations of muscular balance are being weighed. This concept, too, could be considerably enriched by a further knowledge of the specific action of muscle tensions.

Possible Use in Psychotherapy—In psychology and psychiatry, the data obtained through a scientific approach to physiognomy may well prove to be a valuable diagnostic tool. Perhaps, if the beliefs of the Reichian school are substantiated, the treatment of the oral and facial musculature will prove

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[19]Pruzansky, A.: The Application of Electromyography in Dental Research, JADA **44**:49-68 (January) 1952.
[20]Moyers, Robt.: Personal Communication.
[21]Op. Cit. 9.
[22]Coates, J.: How to Read Heads and Faces, Philadelphia, The David McKay Co., 1937.

to be important in psychotherapy. A science of physiognomy would have wide practical application in vocational guidance, social psychology, anthropology, and criminology. Journals in these subjects are replete with articles concerning experiments, thus far fruitless, to set up criteria of facial appearance as it relates to personality.[23, 24, 25]

Negative Implications

For the present, the implications of this concept are negative rather than positive. Bearing in mind the essential unity of mind and muscle, and the specificity of the various psychic and muscular tensions, the fact must be acknowledged that any change in muscle will affect the emotions in a definite way. This raises the question of what psychic effects are brought about by dentists in rendering orthodontic treatment, changing the occlusion through grinding of restorations, making full dentures, treating bruxism or tongue thrust by prosthetic means, or undertaking any other procedure that will change the facial musculature.

Unity of Mind and Muscle—There are those, in dentistry, who insist that bruxism is a psychologic problem and must be treated by psychiatric means. Another school of thought insists that occlusal equilibration and periodontal therapy will correct it. The concept of the unity of mind and muscle embraces the correctness of both points of view and shows that there is, in actuality, no real divergence between them.

Effects of Sudden Muscular Dislocation—Only twenty-five years ago, Henry A. Cotton, M.D., Director of the New Jersey State Hospital at Trenton, treated thousands of cases of psychosis by total odontotomy. He obtained excellent results, and his conclusions, case reports and statistics, were published in the leading medical journals.[26, 27] He ascribed the success of this treatment to the elimination of focal infection. With the demise of the popularity of the focal infection theory, this treatment was abandoned. However, in the light of this concept, many cures might be ascribed to the changes brought about in the mind by the tremendous muscular dislocation that must accompany the sudden extraction of a complete healthy dentition in a young person.

Summary

It has been shown that there is a considerable body of fact that indicates the validity of physiognomy. Indeed the only contrary fact is a negative one, the absence of experimental proof.

Many experiments and findings in anthropology, physiology, medicine, and dentistry have been interpreted to demonstrate the biologic mechanism responsible for the relationship between emotions and dentofacial structure.

As a corollary to this, a concept of the unity, the specificity, and the reversibility of the psychoneuromuscular phenomenon involved has been evolved.

How this knowledge can provide a rational basis for future experimental work that should produce positive results and perhaps have considerable practical importance has been indicated.

745 *Fifth Avenue*

[23] Kanner, L.: Judging Emotions From Facial Expression, Psych. Monographs **41**:1-91 (February) 1931.
[24] Frois-Whitman, J.: The Judgement of Facial Expression, J. Exper. Psychol. **13**:113-151 (April) 1930.
[25] Jeness, A.: The Recognition of Facial Expression in Emotion, Psych. Bull. **29**:324-350 (May) 1932.
[26] Cotton, Henry A.: The Defective, Delinquent, and Insane, New Haven, Princeton University Press, 1921.
[27] Ibid.: The Relation of Focal Infection to Mental Illness, N.Y. M.J. **3**:672-677 (April 17), **3**:721-727 (April 24), and **3**:770-775 (May 1) 1920.

Scurvy After Bilateral Adrenalectomy

DIGBY CHAMBERLAIN, Ch.M., F.R.C.S., and N. V. ADDISON, F.R.C.S., Leeds, England

Summary and Conclusion

The adrenal cortex is the main storage depot of vitamin C in man.

The release of cortical hormones is associated with an increased excretion of ascorbic acid and a reduction of the ascorbic acid content in the gland itself.

Large oral doses of vitamin C appear to increase corticoid but decrease 17-ketosteroid excretion in the urine, indicating a direct action on the adrenal cortex.

It is debatable whether or not vitamin C is concerned with the actual synthesis of the adrenocortical steroids, but it is suggested that the power of the adrenal cortex to secrete the hormones is dependent on the presence of ascorbic acid.

Low Vitamin Excretion—In certain cases of scurvy, it is significant that infection was present in each case, and also in another patient with a low ascorbic acid excretion. Infection was not recorded in any other case which had undergone bilateral adrenalectomy. The presence of infection is believed to cause vitamin C to be utilized more rapidly, and thus deplete the limited reserves. It is believed that patients who have their adrenal glands and ovaries removed tend to have a lowered reserve of the vitamin immediately after the operation. This belief is based on the finding of a low vitamin excretion in seven patients following adrenalectomy and oophorectomy, and comparing these values with a group of patients who were recovering from other types of operation.

Adequate Intake Advised—It is suggested that these cases should receive an adequate intake of ascorbic acid if they are not to develop deficiency symptoms.

Adapted from *British Medical Journal* (Nov. 8) 1958, p. 1130.

Simplified Impression Technique for BRIDGE *and* PRECISION *Cases*

JOSEPH RUBINSTEIN, D.D.S.,* Highland Park, Illinois

DIGEST

This article describes a technique for taking impressions of precision cases and bridges. The technique employs a combination of plaster of paris and silicone. The result is an accurate reproduction of all the undercuts and ridge areas together with a proper positioning of the retainers.

Impression Material

In the past, when an impression was taken to construct a bridge or a precision case plaster of paris was used as the impression material. One reason for this was that with plaster of paris the retainers occupied the same relative positions in the working cast as they occupied in the abutment teeth. For if the slightest dislocation of the retainers had occurred in any direction, the result would have been a misfit of the finished appliance, necessitating a disassembling and a resoldering of the component parts of the bridge.

Advantages—Other reasons for using plaster of paris were the following:

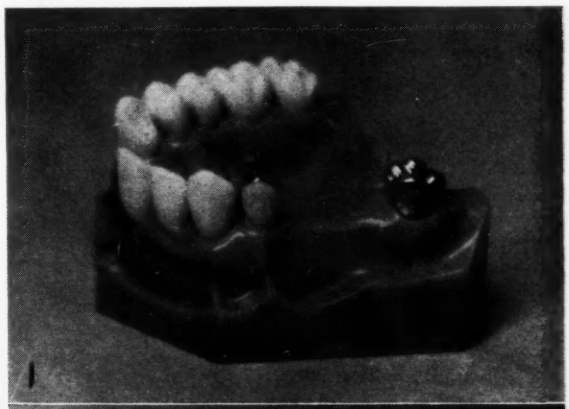
1. It is extremely accurate.
2. It can be prepared quickly.
3. It is inexpensive.[1]

Disadvantage—The main disadvantage in the material is that it requires much chair time to remove the plaster impression from the mouth, particularly when locking undercuts exist.

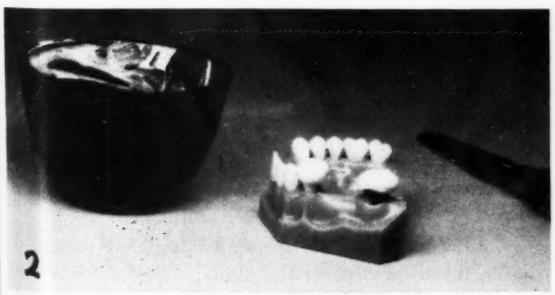
Combination of Materials—The technique advocated herein uses plaster of paris around the abutment teeth. In this way the retainers are accurately seated in the plaster and will not be dislodged. For the re-

*Visiting Research Associate, Department of Dental Materials, Marquette University, Milwaukee, Wisconsin.

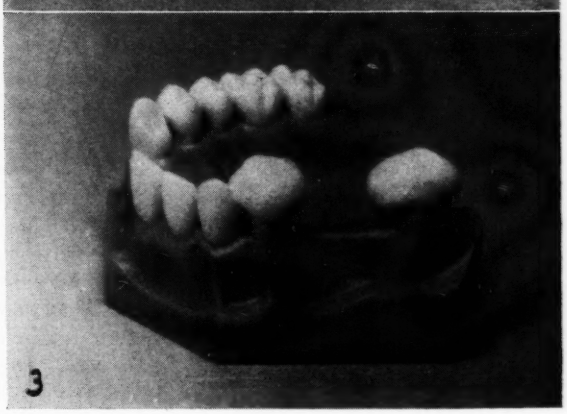
[1]Applegate, Oliver C.: Essentials of Removable Partial Denture Prosthesis, Philadelphia, W. B. Saunders Company, 1954.



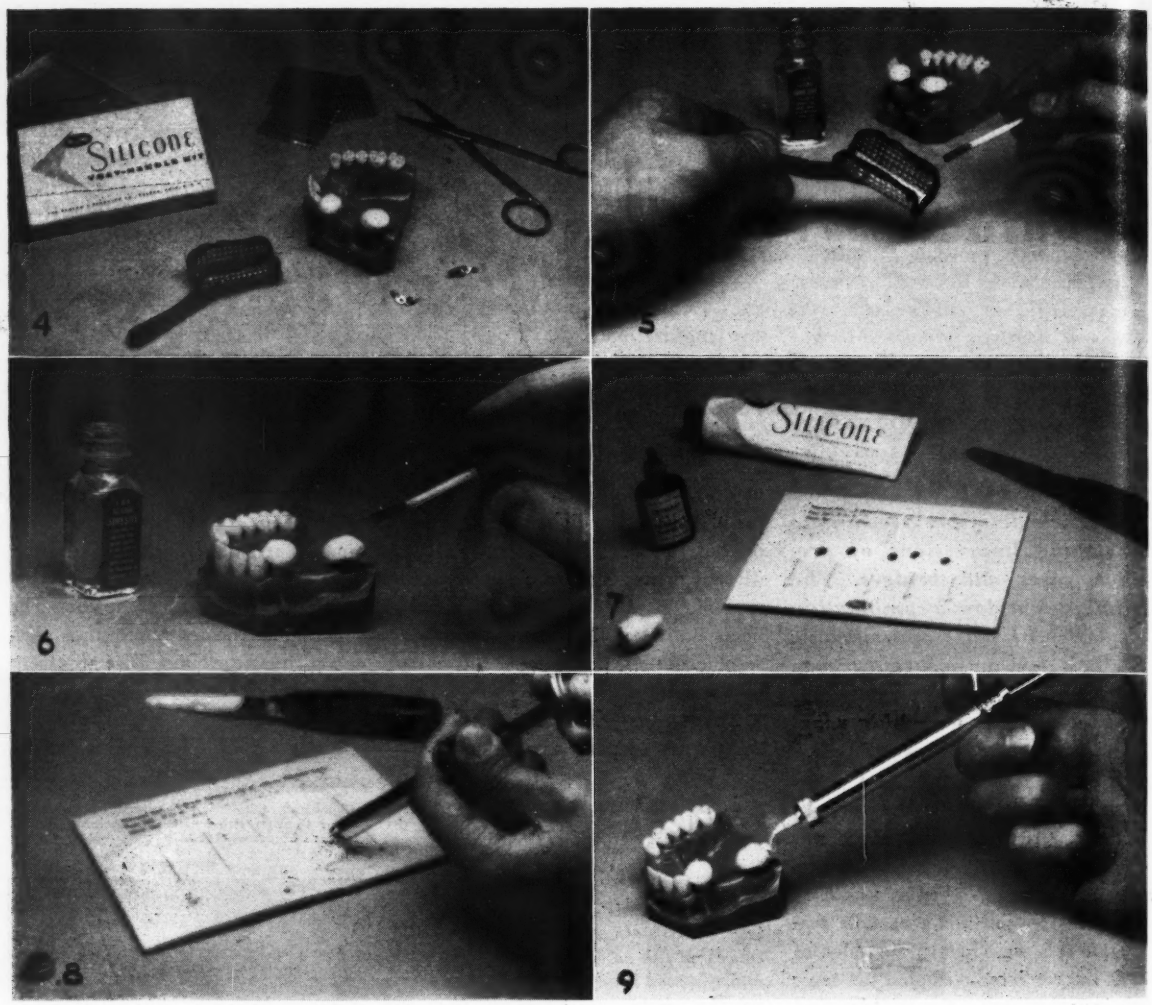
1.
Retainers consisting of 3-surface inlay and full gold crown seated in or on the abutment teeth.



2.
The abutment teeth containing the retainers are covered with plaster of paris.



3.
The plaster should not extend beyond the widest circumference of the teeth.



4.
A tray is prepared which will cover the abutment teeth and the ridge tissue.

5 and 6.
The tray and the plaster on the abutment teeth are painted with an adhesive so that the silicone impression material will adhere to them.

7.
The silicone paste and the catalyst are mixed in the proportions advocated by the manufacturer.

8.
A portion of the silicone mixture is inserted into the syringe.

9.
The material from the syringe is squeezed around the undercut areas of the abutment teeth and on the ridge tissue.

maining area silicone impression material is used. It has good elastic properties and flows easily. It will, therefore, give an accurate impression of the undercut areas; it also permits impressions of the ridge tissues in their completely undisturbed, relaxed, and static condition.[2]

[2]Addison, Paul I.: An Application of the Mucostatic Principle to the Precision Attachment Partial Denture, Dental Survey, pp. 108-113. (January) 1946.

Steps in the Technique

1. The retainers are constructed for the bridge or precision case.

2. The retainers are seated into or over the preparations.

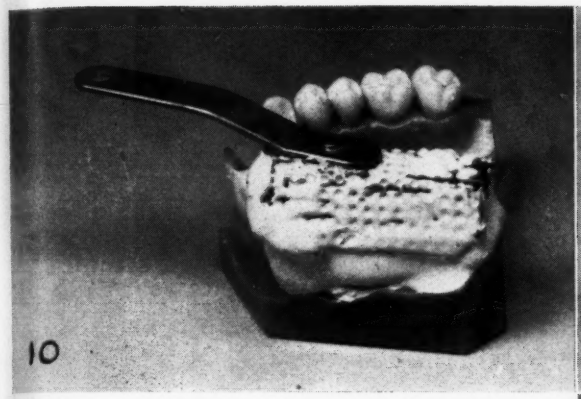
3. The incisal or occlusal portions of the teeth containing the retainers are covered with plaster of paris. The plaster should not extend beyond the widest circumference of the abutment teeth. Otherwise, it will be locked in the undercut areas.

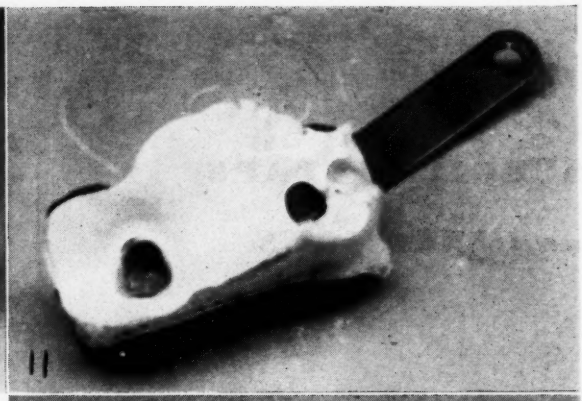
4. The outer surface of the plaster is painted with adhesive.

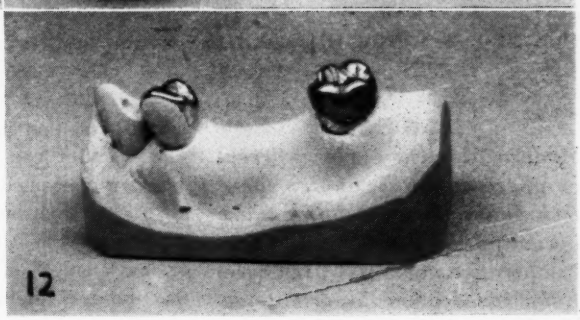
5. A tray is prepared which will cover the plaster-coated teeth and the ridge tissues to the muccobuccal and muccolingual folds. This tray is also painted with adhesive.

6. The silicone paste and the catalyst are mixed in the proportions recommended by the manufacturer.

7. A portion of the material is inserted into the syringe and then







10.
The remaining portion of the silicone mixture is loaded into the prepared tray. The tray is then placed over the abutment teeth containing the plaster-coated retainers.

11.
The retainers are properly seated in the plaster. The silicone material gives an accurate impression of the gingival portion of the abutment teeth and the ridge tissue.

12.
From the combination plaster-silicone impression a stone model is produced which shows the retainers occupying the same position as on the original model.

squeezed around the gingival areas of the abutment teeth.

8. The remaining portion of the silicone mixture is loaded on the prepared tray and carried over all the abutment teeth and ridge tissues.

9. At least nine minutes should be allowed to elapse from the time the silicone is mixed until the impression is withdrawn from the mouth.

The impression will contain the retainers seated in the plaster, and all the undercuts and ridge areas accurately outlined in the silicone impression material.

1893 *Sheridan Road*

Author's Note: The materials employed in these studies were R & R Silicone adhesive and impression products supplied by the Ransom and Randolph Co., Toledo, Ohio.

Toxicity of Local Anesthetics

JOHN ADRIANI, M.D.

Some reactions are in no way related to the local anesthetic drug. The side actions of epinephrine may be mistakenly ascribed to the local anesthetics. Pallor, tachycardia, or tremor and excitement caused by epinephrine may be confused with the prodromal signs of nervous system reactions. The differentiation is not difficult because epinephrine does not cause convulsions, twitchings, or disorientation. The blood pressure is markedly elevated and the pulse rate is accelerated. Pulmonary emboli, fat emboli, air emboli, coronary occlusion or cerebral vascular accidents may occur coincidental to the use of a local during operation. They may have been mistaken for a drug reaction by uninitiated clinicians unfamiliar with the behavior of local anesthetics. Convulsions which persist after the administration of a barbiturate or which recur at periodic intervals for several hours after the use of local anesthetic drugs are due to some other cause and not to the drug.

From *Postgraduate Medicine* **24**:99 (August) 1958.

SURGICAL FLAPS *and* INCISIONS

FRANCIS J. McDONOUGH, D.D.S.,* Newburgh, New York

DIGEST

Modern dentistry places great emphasis on the use of high speed techniques. These techniques are becoming increasingly important in operative dentistry. Used carefully, speed is an important factor in dental surgery. The patient with a badly deteriorated mouth, because he has been traumatized in the past with lengthy dental procedures and therefore neglected dental care, will greatly benefit from modern high speed techniques. Intelligent planning and the careful use of speed will reduce chair time and avoid undue trauma to the patient. This article presents a successful approach to the more difficult exodontic problem that all dentists encounter at one time or another.

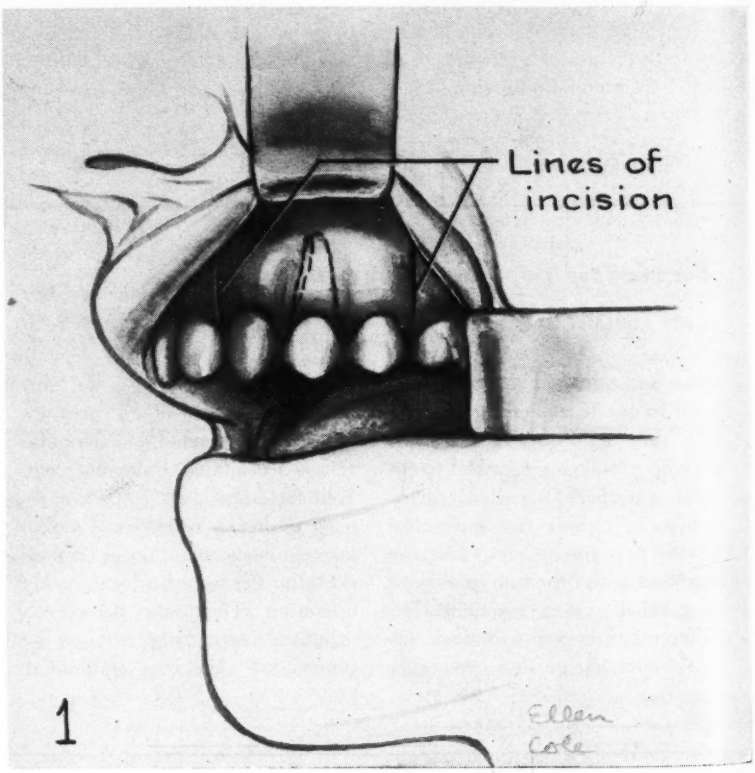
Operative Procedure

Many dentists do not realize that it is possible to remove by surgery a molar tooth encased in dense alveolus in the same amount of time that it takes to remove a tooth in more normal bone by forceps technique. In the realization of this operation the placing of incisions and the handling of the flaps is of prime importance. These measures are important factors in operative time and the prevention of unneccessary trauma.

Importance of Visibility—Placing the flaps so that the surgeon has perfect visibility of the surgical field is the first rule that should be observed. The operator can save himself unnecessary osseous dissection if he can always see what he is doing. The incision should be carried high enough or low enough on the mandible so that the apex of the tooth to be removed can always be seen (Fig. 1). The small foreign bodies that can be seen (spiculae of alveolus or tooth; or the small root apex) can always be easily identified and removed.

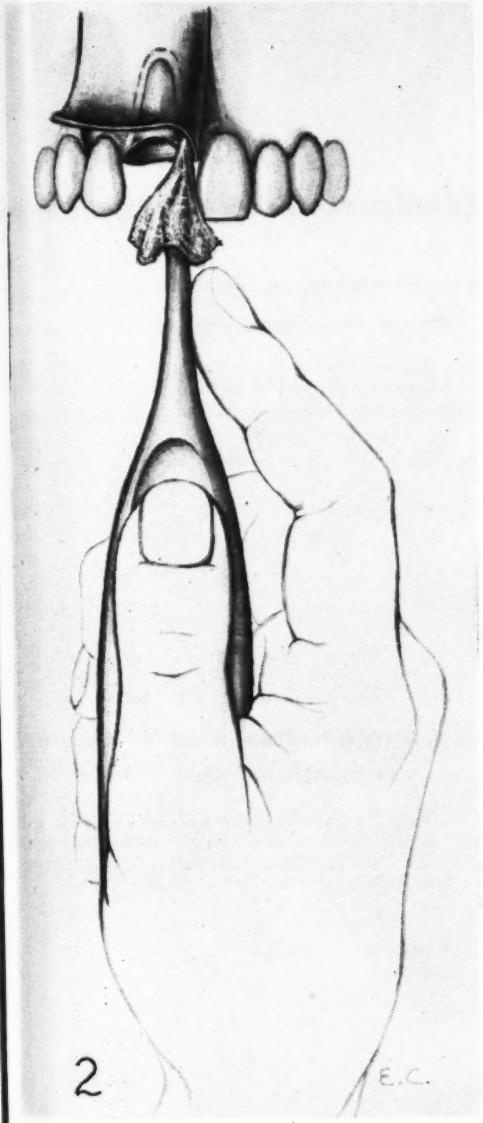
Management of the Periosteum—Practitioners are not always in agreement on the specific function of the periosteum, but clinical experience has demonstrated that adequate care of and respect for it will pay dividends. The following precautions are helpful:

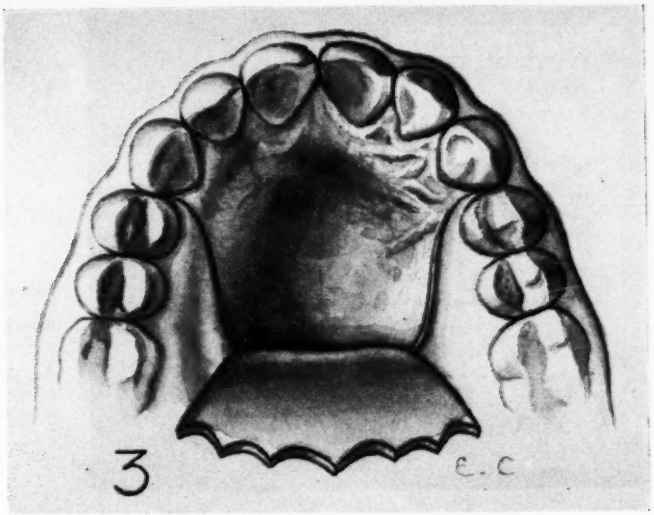
1. The incision should start with the scapel held so that maximum pressure can be applied. This will cleanly incise the periosteum throughout the entire length of the incision.



1.
Flap should allow perfect visibility.

*Attending Oral Surgeon, St. Lukes Hospital, Newburgh, New York.





2.
Gauze held on the end of periosteal elevator to raise periosteum without tearing it.

3.
Flap placed so that there is no pinching of blood vessels when it is retracted.

4.
Area proximating flap undermined to facilitate suturing.

2. A periosteal elevator is an extremely important instrument in doing surgery of the mouth. A piece of gauze, on the end of the elevator (Fig. 2) gently pushed ahead of it will help to remove the periosteum cleanly from the bone. It will also prevent perforating the periosteum.

3. The mucoperiosteum is most adherent at the neck of the tooth, at the point of attachment of the frena, and over cystic areas. In the latter areas where resorption of bone has taken place, cystic tissue and periosteum may have to be divided.

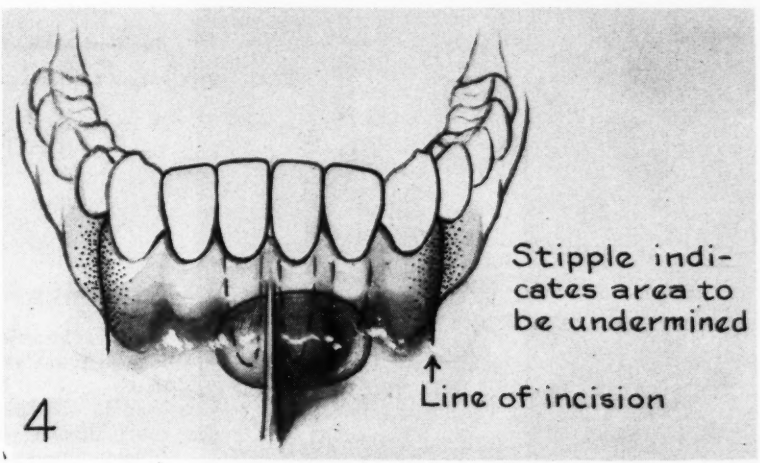
Protection of Clot—The oral cavity is adequately supplied with blood and the oral surgeon should profit from this condition. The incision should be long enough and the flap large enough so there is no pinching of blood vessels when the flap is retracted (Fig. 3). Enough area in the flap should be included so that it has a shoulder of bone to rest against when it is replaced. This will protect the clot by preventing the soft tissues from collapsing.

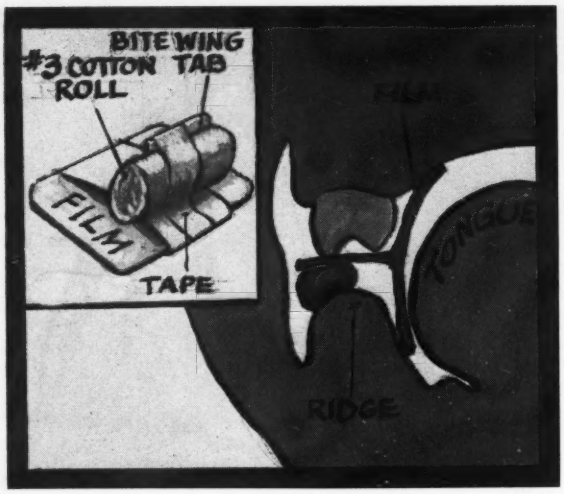
Suturing Facilitated—Suturing can be made easier if the approximating tissue is undermined at the time the incision is made (Fig. 4).

Summary

Surgery in a comparatively small field can be greatly expedited if a few basic rules are observed: (1) always

(*Continued on page* 470)





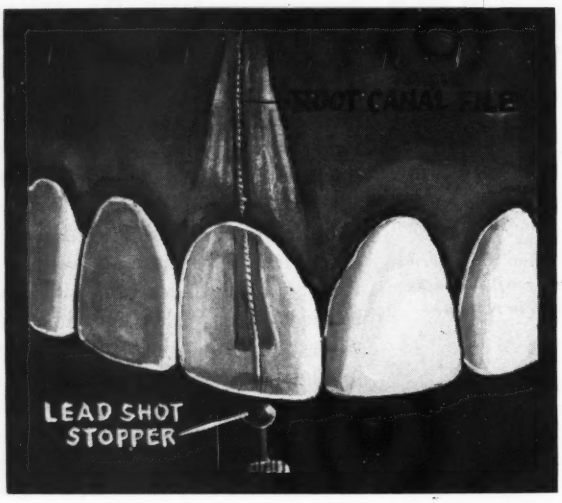
1

Clinical and Laborato

Bitewing Modification for an Edentulous Arch

Albert G. Siepker, Jr., D.D.S., Quincy, Illinois

1. Fasten a Number 3 cotton roll to the bitewing tab with cellophane tape. When the cotton roll is placed on the edentulous ridge a bitewing exposure may be made of the teeth in the opposite arch.

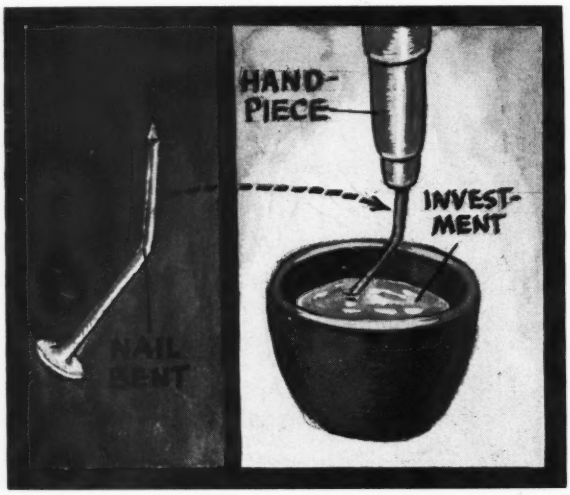


2

Control of Root Canal Instrumentation

S. S. Seidenberg, D.D.S., Brooklyn, New York

2. After the length of the root canal has been determined by x-ray examination, attach a split lead shot (fishing sinker type) in the proper position to all the endodontic instruments that will be used in the procedure. The lead shot will act as a stop.



3

Bubble-free Inlay Investment

Joseph I. Schnitman, D.D.S., New Haven, Connecticut

3. Select an ordinary nail with a shank the same size as a dental bur. Bend the nail to conform to the shape of a small rubber mixing bowl. With the nail inserted in the handpiece mix the investment.

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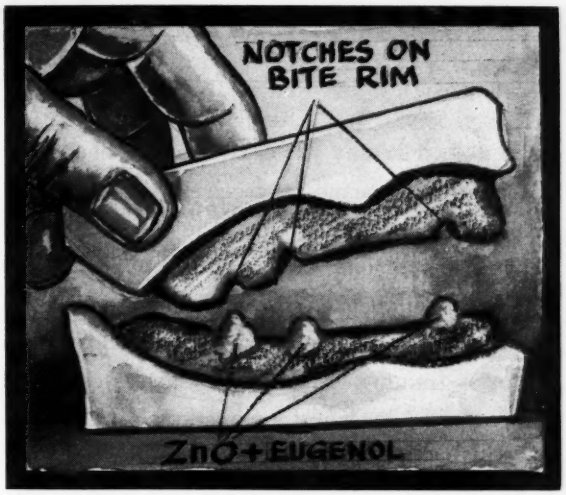
SUGGESTIONS . . .

Positioning of Wax Bite Rims

Carl Gold, D.D.S., Boston, Massachusetts

4. After the wax occlusion rims have been fitted and contoured, notch the upper rim in several places. Place a mix of zinc oxide-eugenol paste on the lower rim. When the patient occludes in centric the paste will flow into the notches. When the paste has hardened the rims are removed and can be mounted in the proper relationship.

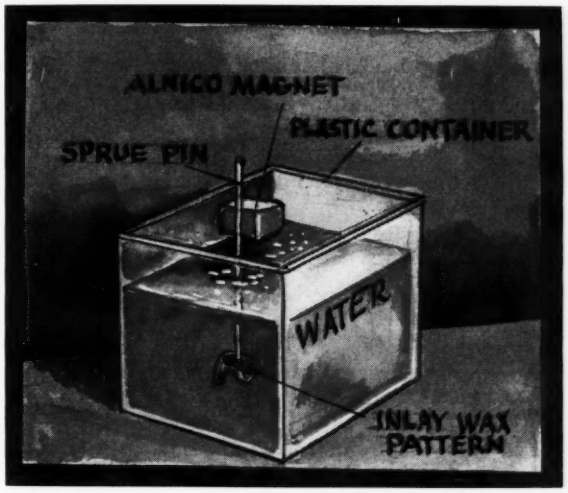


4

Protecting a Wax Pattern Before Investment

Paul Friedman, D.D.S., Geneva, Switzerland

5. Secure a small alnico magnet from a radio parts shop. Cement the magnet inside a small plastic box. Fill the box with water. The metal sprue pin that holds the pattern will be attracted to the magnet. The wax pattern is suspended in the water.

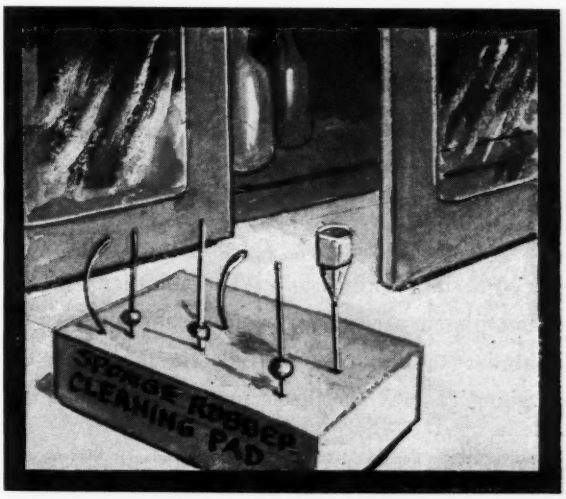


5

Needle Storage

H. Wiesjahn, D.D.S., LaCrosse, Indiana

6. Cut a two-inch strip from a sponge rubber hand cleansing pad. Sterilize the pad by squeezing it in a liquid sterilizing solution. Allow the pad to dry. Insert suturing and hypodermic needles in the pad and store in a surgical cabinet. The sponge rubber will not dull the needle points and will hold the needles in an easily accessible position.



6

technique involved; and jot down the advantages of the technique. This shouldn't take ten minutes of your time. Turn to page 470 for a convenient form to use.

Send your ideas to Clinical and Laboratory Suggestions Editor, DENTAL DIGEST, 708 Church Street, Evanston, Illinois.

The EDITOR'S *Page*

As SURGERY in any of its forms becomes more audacious the demand for more skillful anesthesia becomes equally important. The days are gone when almost anyone was allowed to pour ether on a piece of cloth held over a patient's nose or a person was permitted to operate a "gas" machine without prior training. The dentist who serves as the anesthetist for a general anesthetic and as the surgeon at the same time is, or certainly should be, looked down upon as an anachronism.

Any dentist who accepts the responsibility of rendering people unconscious with drugs through inhalation or by intravenous injection should be aware of the basic physiologic processes that are involved, of the indications and limitations of the various anesthetic agents, and of the resuscitative methods that are indicated should an emergency develop.

A comprehensive course of clinical indoctrination in anesthesiology is, of course, preferred to any other kind of teaching. If such a course is not available or convenient for the dentist he may now acquaint himself with the facts of modern anesthesia from a book recently published by an expert in the field.[1]

This is the kind of straight talk that a clinician will appreciate:

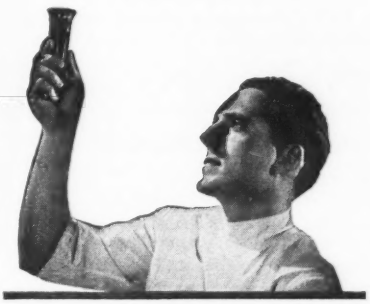
"Exodontia and most other dental procedures performed in the office, are usually placed in the category of 'minor' surgery. Surgery may be categorized as 'minor' or 'major' but general anesthesia cannot be. *There is no such thing as a minor general anesthetic. The administration of a general anesthetic is a major procedure* irrespective of what it is for and who administers it. The simplicity of the contemplated procedure by no means nullifies or minimizes the hazards involved. The hazard of undergoing general anesthesia may be likened to the price of the cover charge one pays at a club for the privilege of entering the facility. Indulgences by the participant, after entering, are at an additional cost in proportion to his likes and desires. The same applies to general anesthesia. The inherent hazards for a particular type of anesthetic are the same whether or not surgery is performed. Surgery superimposes additional hazards. If the procedure is minor and brief, the added hazard is small. Should it be extensive, then the superimposed hazard may be increased many-fold. Thus, the simplicity or complexity of an anesthetic procedure is determined and established before one begins to operate.

"Emphasis is often placed upon the duration of the procedure, the inference being that in a short procedure the dangers of anesthesia are negligible. The saying 'a whiff of gas' or 'just a little pentothal' is indicative of this attitude. Of course, it is conceded that many patients escape death because the operation is short and the maladministered anesthetic is discontinued in time. However, a catastrophe would result if the maladministration had been allowed to continue for a longer period of time. For example, asphyxial concentrations of nitrous oxide may be administered for several minutes to extract teeth without necessarily causing death or apparent ill-effects. A patient may tolerate sub-oxygenation for several minutes and, when the operator is fast, survive; but is asphyxiated under the same circumstances if the operation lasts a longer time. However, one cannot predict for how long a patient may tolerate a maladministered anesthetic. It is not unheard of for patients to die during anesthesia before surgery is commenced."

If a dentist administers general anesthesia he has the responsibility to understand the principles and exercise the safeguards that are defined in the Adriani book. If the dentist refers patients to a specialist he should practice the kind of comprehensive anesthesia that is described by Adriani.

[1]Adriani, John: Fundamentals of General Anesthesia for Students and Practitioners of Dentistry, Springfield, Illinois, Charles C Thomas—Publisher, 1959.

MEDICINE and the Biologic Sciences



Antibiotics in Surgery

Lowered resistance and sources of contamination both within and without the body increase the susceptibility of the host to surgical infection. When an infection seems probable, antibiotics should be administered in full therapeutic dosage. On the basis of later cultures the drugs may be modified.

All patients are susceptible in varying degree to such hazards as preoperative stress; medication-abolishing reflexes, which dry secretion and cause hypotension; anesthesia; and surgical trauma. Lowered resistance may also be aggravated by diminished liver function, lowered white cell count, abnormally low gamma globulin, diabetes, malignant tissue in the operative field, x-ray therapy, reduction of properdin in the blood, shock, and steroid therapy. Under such conditions autoinfection is easily established by contamination from a ruptured viscus or abscess or by invasion of pathogenic bacteria from bowel, nasopharynx, or skin.

Hospitals now generally harbor antibiotic-resistant bacteria. These are mostly staphylococci and gram-negative bacteria from the bowel. Hospital personnel provide both a constant reservoir and effective transportation from patient to patient. Bedding is often heavily contaminated and difficult to sterilize.

An infection originating after the patient comes to the hospital is best suppressed by an antibiotic not commonly used since the causative agent is probably in the resistant group. A culture from the operative site just before closure may be an invaluable guide. As soon as infection is suspected, drug therapy should be begun. Not only the bacteria but their accumulated toxins may be fatal. The initial dosage should be high, with reduction upon evidence of toxicity. The broad-spectrum antibiotics are given by mouth in doses of 2 grams a day initially and reduced to 1.5 to 1 gram as control is achieved. Parenteral doses should not exceed 1 gram.

When control of infection is suggested by reduction of fever, well-being of the patient, and subsidence of inflammation and pain, the dosage is reduced by one-half for forty-eight hours. It is discontinued completely if no evidence of infection returns during an observation period of two to three days.

In surgical patients who have damaged heart valves or congenital heart lesions, antibiotics should be used preoperatively. In bowel surgery, with peritoneal soiling, antibiotics are used alone or with sulfa drugs of low solubility. Colon surgery is still responsible for about 30 per cent of deaths from surgical infection.

Persistent infection is treated with blood transfusions, increase in fluids, and reduction of excessive medication. Combination of antibiotics may produce results when a single agent has failed. One of the drugs should be effective against gram-positive, another against gram-negative organisms, with possibly a third agent that is effective against both.

Foster, Frank P.: Deitch, Bernard; and Dadey, John L.: Antibiotics in Surgery: Some General Principles and Practical Points, S. Clin. North America **37**:811-826 (*September*) 1957.

Psychiatry in Dentistry

Often the dentist can treat the difficult patient with much better understanding and ability if he heeds the advice given the family physician. The family physician is in an advantageous position to protect against chronic mental illness. Every day he treats patients psychosomatically. The reluctance of the practitioner of general medicine to treat mental illness often stems from failure to accept neurosis as a disease, and the lack of a specific diagnosis. Mental disease suggests a chronic illness with a prolonged therapeutic period and limited chance of cure, resulting in the physician's frustration and discouragement.

In psychotherapy there are certain "don'ts" which are of great value to any professional man:

(1) Don't argue. The patient should be encouraged to talk about his problems with the hope that he will recognize the source of his difficulty. Degeneration into a discussion or argument should never be allowed.

(2) Don't advise. Counseling is an attempt to solve some of the patient's problems for him. Therapy tries to help the patient solve his own problems.

(3) Don't be hostile. The patient should be allowed expressions of hostility without censure.

(4) Don't be unsure. A complete physical examination assures the physician that nothing organic accounts for the patient's symptoms. Repeated examinations should not be necessary even if the patient demands them. Any abnormalities should be carefully considered and not thoughtlessly used to explain obviously neurotic symptoms.

(5) Don't be too reassuring. Patients realize that a certain amount of workup is necessary to make a diagnosis. Premature optimistic pronouncement may convince them that their symptoms are taken too lightly or that the physician is inefficient.

(6) Don't approve or censure. To assist the patient in discovering the

(*Continued on page* 466)

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reasons for unusual attitudes, the physician should accept the patient's actual words as factual without showing condonement or disapproval.

(7) Don't be too credulous. The therapist should not become so engrossed in the patient's words as to lose their meaning.

Basically, all psychotherapy is dependent on a few simple concepts: confidence of the patient in his physician, support of the patient by the physician, and opportunity for the patient to talk about his troubles thereby gaining some measure of insight.

Usually the features of the suicidal patient can be recognized. Unsuccessful attempts should be viewed seriously. Depressed patients often repeat such endeavors. Expressed suicidal intent should never be dismissed as an attention-getting device. A rapid change from depression to elation may signify a planned suicide. Recent or heavy drinking should be a warning, since depressed patients may drink to relieve the associated discomfort.

All agitated depressions, acute panic states, and morbid thoughts of baseless self-accusation may suggest suicidal intent. Suicide in the family or the recent loss of a loved one is also significant.

Hyman, Maurice: Some Aspects of Psychiatry in General Practice, GP **16**:83-86 (*September*) 1957.

Allergic Problems In Dentistry

It is recognized that dental factors frequently contribute to allergic problems. Often infected teeth, contact reactions to dentures, and sensitivity to drugs and anesthetics used in dental procedures are potentially related to such allergic manifestations as urticaria, asthma, migraine, and angioneurotic edema. On the other hand, periodontal disease and deformed arches can result from allergic conditions.

The typical allergic facies of asthmatic children frequently include irregular teeth. Nasopharyngeal edema may cause nasal obstruction, septal deviation, and poor development of sinuses. This eventually may lead to constriction of the upper dental arch and inadequate space for growth and eruption of teeth.

The importance of a detailed history cannot be overemphasized. A suspected allergic factor should be established by sensitivity tests. Drugs which commonly produce dermatitis or stomatitis in allergic persons are those containing phenolphthalein, barbiturates, salicylates, arsphenamine, belladonna, arsenic, mercury, bromides, codeine, quinine, and sulfonamides. Similar reactions occur from penicillin, sulfaguanidine, Gantrisin®, and Achromycin®. The prolonged use of Dilantin® sodium causes gingival hyperplasia in some patients, especially when oral hygiene is poor.

Removal of the offending agent or hyposensitization is the most obvious form of treatment. If the allergen is in the medication or anesthetic, harmless substances must be substituted. Usually Xylocaine® can be used instead of procaine. It is also

important to watch for delayed reactions from local anesthetics.

Thomas, J. Warrick, and Syrop, Harold M.: Allergy Problems Related to Dentistry, Ann. Allergy **15**: 603-617 (*November*) 1957.

Gingival Leukoplakia

Frequently the question is raised as to what can be done for gingival leukoplakia. Usually any thickening of the mucosal epidermis tends to develop a whitish discoloration.

Leukoplakia is the analogue of senile keratosis on the skin. As such it has potentialities for malignant change and development. Fortunately, in a large number of cases no progression takes place. In some there is even regression to normal spontaneously or with removal of an irritant such as discontinuance of smoking.

Patients using proper oral hygiene and who are free of incitants, such as syphilis, may be watched for untoward changes. Biopsies should be considered when thickening, induration, fissuring, and extension of patches are noted. Snipping tiny bits of mucosa here and there from selected sites is adequate for histologic study.

Destruction by cautery or resection is indicated where there is suspicion of irreversible changes. A number of medical measures have been advocated for use both locally and systemically. Unfortunately, none has proved reliable or given reproducible results.

Questions and Answers; Gingival Leukoplakia, JAMA **166**:1403-1404 (*March* 15) 1958.

Contact Dermatitis

Eczema is a common condition and is frequently noted in patients seeking help for all types of disorders. There is no satisfactory definition to include the many forms and phases of the condition.

There are many theories and explanations for the causes of "eczema." External, internal, and combined etiologic factors have been advanced as the causes of this troublesome and economically devastating disease.

It appears that sensitization is a contributing factor in the production of eczematous reactions in the skin. Experienced observers are aware, however, that the concept of allergy does not clarify the many forms of the disease.

Eczema and dermatitis have the same basic histologic changes. One could infer that acute dermatitis due to a known and proved excitant may produce changes identical to those found in a comparable stage of eczema. Since the reaction is brought about by an externally applied agent, it might be assumed that an exogenous factor is responsible for all or at least many eczemas.

However, this assumption does not explain the selectivity that somehow must depend upon the receptiveness of the host. An adequate explanation is still lacking. It is important to detect the external factors, if any, which many times can be found in the environment or occupation of the patient.

Time and research may find meth-

(*Continued on page* 470)

Advertisement

Sharp Increase in Use of Myerson's Plastic Teeth

Experience with Myerson's Dura-Blend Plastic Teeth Validates Research

Recent figures show an increase of 58% in the use of Myerson's Dura-Blend plastic teeth. Thus has large scale clinical experience confirmed the findings of the "detectability" test and other studies reported when 13 new moulds and 3 new shades were recently added. The importance of these new additions is shown by the fact that they now account for close to 40% of all the Dura-Blend teeth used.

Dentures Found Improved Three Ways

As expected from the preliminary research, in actual use, dentists found the new developments to be of advantage in three principal ways. This is shown in the analysis that follows of the hundreds of voluntary statements received.

(1) 46% of the statements praised the "*naturalness*" *and* "*esthetics*" of the new Dura-Blend developments. This validates the results of the series of detectability tests conducted at 1958 meetings of Dental Societies in which only 10.7% of the participating dentists were able to accurately distinguish Dura-Blend plastic teeth from natural teeth. (See table below.)

Meeting	No. of Participants	No. of Correct	% Correct
Boston	138	11	8.0
Buffalo	112	14	12.5
Toronto	104	13	12.5
TOTAL	354	38	10.7

Dura-Blend detectability test results. Full details may be secured by requesting Reprint DB 1

(2) 28% laid specific emphasis on advantages derived from *the three new shades*. Previous study had shown the augmented Dura-Blend shade guide capable of yielding first choice in match to natural teeth 44% more often than any other of the shade guides tested.

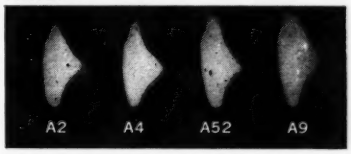


Figure 1. Slender forms, longer ridge laps typical of the new Dura-Blend moulds.

(3) 26% found greatest cause for comment in the new Dura-Blend *moulds* which had been added based on an investigation of possible improvements in this phase (see Figure 1).

Evaluation Assortment Available

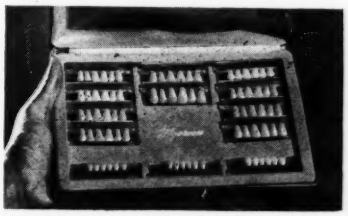
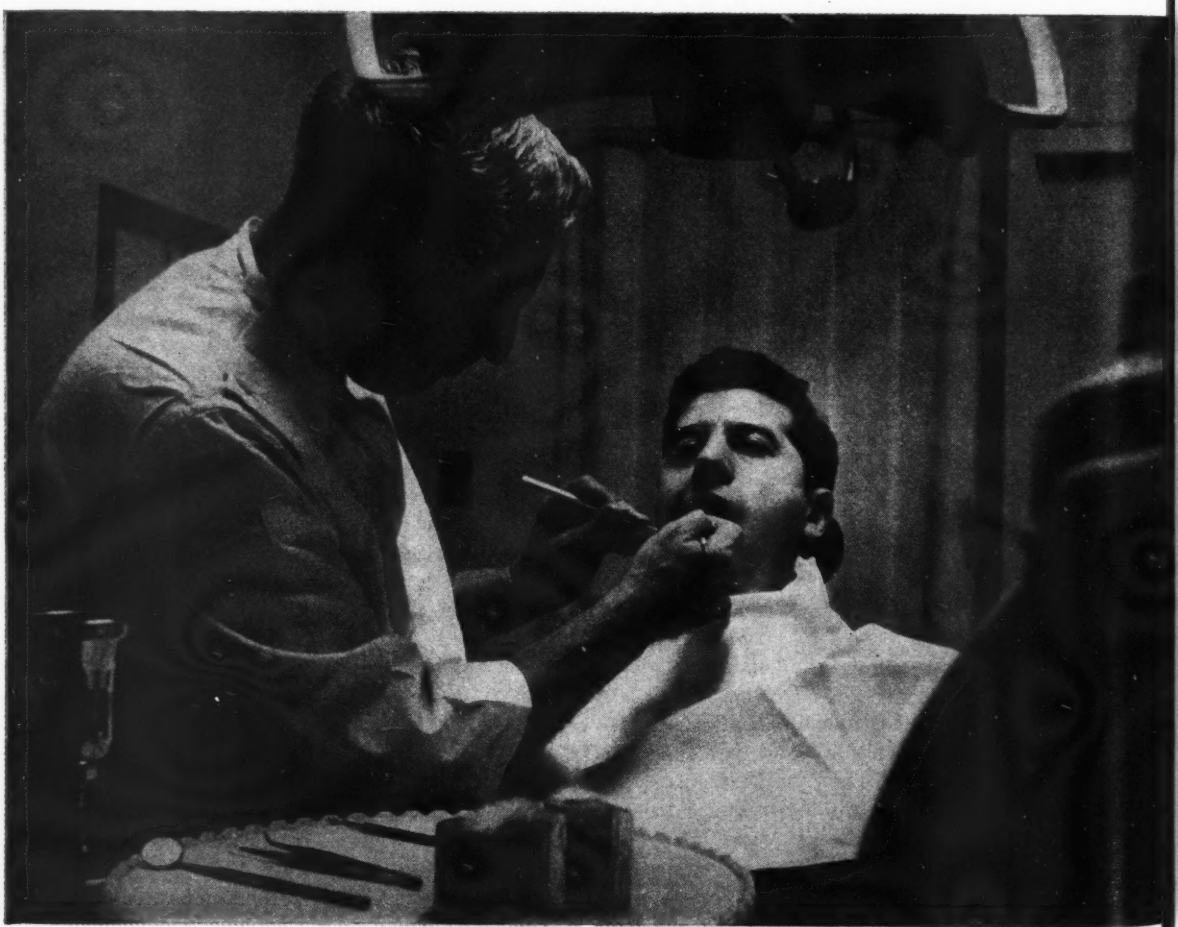


Figure 2.

A special Evaluation Assortment (#DB-13) has been prepared containing the new Dura-Blend moulds and shades. Arrangements will be made to show it to you upon request — without obligation on your part. Address: Myerson Tooth Corporation, 91-90 Hamilton Street, Cambridge 39, Mass.

A report of clinical findings published to date:

Thermodent™ Tooth Paste relieved and controlled hypersensitive teeth in 79.2% of the cases studied



Thermodent as an aid to everyday management of hypersensitivity

Published reports of clinical investigations show that patients who experience tooth pain from hot and cold or sweet and sour foods—as well as during cold weather—benefit measurably from regular brushings with Thermodent. In 571 observations on 92 patients, it was found that 42 per cent of the patients had complete relief of dentine hypersensitivity—and 30 per cent "good" relief—during regular use of Thermodent. All 92 patients "reported at least some benefit."[3]

The reduced sensitivity afforded by Thermodent allows routine and thorough brushing for patients formerly unable to maintain proper oral hygiene. In addition, office visits are less painful because sensitivity to instrumentation is diminished—making for better patient cooperation and a saving of valuable chair time.

Thermodent for relief during painful dental procedures

In periodontia, for example, extreme dental sensitivity is normally encountered. In a recent study restricted to periodontal patients, the effectiveness of Thermodent as a desensitizing agent was shown by the following results: 97 per cent of the patients experienced complete relief from hypersensitivity after three weeks of Thermodent brushing, yet control subjects with sensitive teeth "were not free from the complaint after five weeks on a placebo."[1]

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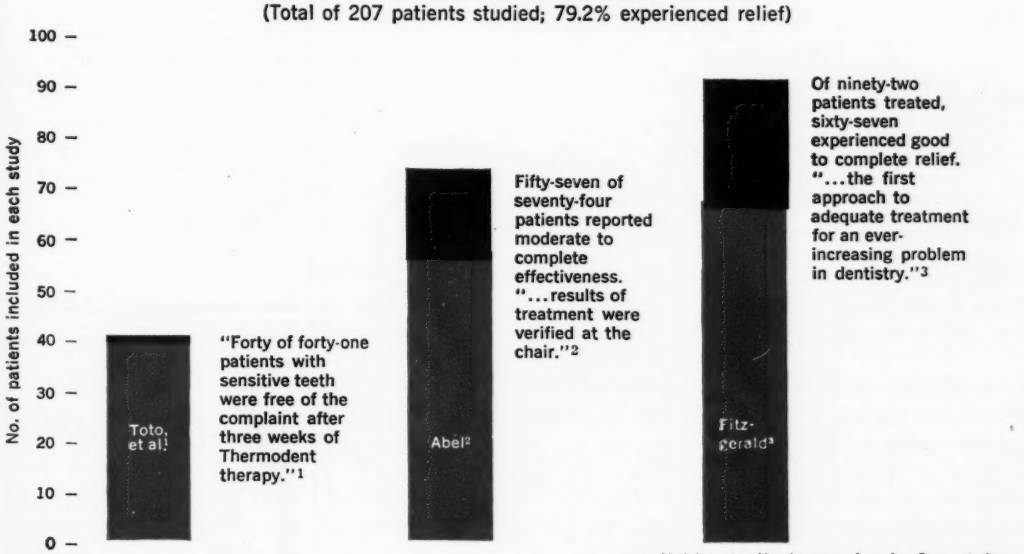
SHOWING RESULTS OF THERMODENT THERAPY
(Total of 207 patients studied; 79.2% experienced relief)


No. of patients included in each study
100
90
80
70
60
50
40
30
20
10
0
Toto, et al[1]
Abel[2]
Fitz-gerald[3]
"Forty of forty-one patients with sensitive teeth were free of the complaint after three weeks of Thermodent therapy."[1]
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1. Toto, P. D.; Staffileno, H., and Gargiulo, A. W.: J. Periodontology 29:92 (July) 1958.
2. Abel, I.: Oral Surg. 11:491 (May) 1958.
3. Fitzgerald, G.: Dental Digest 62:494 (Nov.) 1956.

CLINICAL AND LABORATORY SUGGESTIONS

(*See pages* 462 *and* 463)

Form to be Used by Contributors

To: Clinical and Laboratory Suggestions Editor
DENTAL DIGEST
708 Church Street
Evanston, Illinois

From: _____

_____

Subject: _____

Explanation of Procedure:

Sketch:

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ods that will make it possible to discover with certainty what factor or combinations of factors cause a subject to acquire eczema or render him susceptible to an outburst if he continues to be exposed to the incriminating elements.

Contact with many well-known possible irritants is the simplest explanation for the production of an eczematous reaction. The removal of the causative contactant from the spheres of activity of a patient is not enough to bring about an immediate secession of the inflammation. The damage wrought as well as the reaction provoked must be overcome and the normal physiology of the integument restored.

Michaelson, Henry E.: Contact Dermatitis, Mod. Med. **25**:69-70 (*June* 1) 1957.

Surgical Flaps and Incisions

(*Continued from page* 461)

be able to see the entire surgical field, (2) remember that the oral cavity is a contaminated area but is also quite vascular, hence the flap should be relaxed so that the blood supply is not inhibited, and (3) the tissue must always be handled carefully. Dentistry has one ultimate aim: restoration of function. If surgery in the oral cavity includes reduction of postoperative pain and facilitation of healing definite achievement is made toward that ideal.

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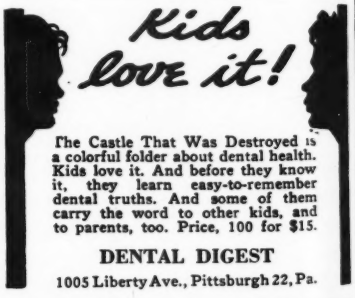
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Contra-Angles

Clinical Sense

There is no diagnostic substitute for looking at and talking to a patient. Admirable and helpful as they are, laboratory tests are not substitutes for clinical examination. X-ray shadows certainly reveal changes in the density of tissue. Blood and saliva tests give valued clues to the status of body fluids. Microscopic examinations give important information on the structure of cells. As more and finer laboratory tests are evolved in dental and medical practice there is the danger that the patient-as-a-person may be pushed further into the background.

Man is more than the sum of his body parts and tissues because he also possesses a mind and a soul. The mind, the emotions, the human spirit are not adaptable to precise scientific measurements. We may make rough approximations of the quotient of intelligence, of the manner and kind of emotional response, of the depth of spirituality. We cannot, however, measure any of these qualities with the techniques of science. Perhaps it is just as well that we cannot.

The limitations of our diagnostic skills came to my attention recently when a young woman of 27, whom I have known during her entire life, wrote to me from a distance of more than 2000 miles to ask for a professional opinion. Although she sent me an acceptable set of full mouth x-rays I was hard put to make anything except a provisional diagnosis, despite her well-written case history.

The problem that presented was a relatively common one among young adults. The young woman had taken a European trip. Her budget was limited. She developed bleeding, swollen, and sore gums while she was away from home. The condition resisted her self-administered treatment. The history suggested an acute ulcerative gingivitis with a probable superimposed ascorbic acid deficiency. Or perhaps the sequence was reversed; the vitamin deficiency prepared the tissue-soil for the invasion of microorganisms.

When the young woman returned to her home she sought the services of a dentist. I presume that the dentist had strong leanings toward periodontal surgery for that was the treatment that he suggested on a rather dogmatic, take-it-or-leave-it basis. It was then that I received the call to attempt diagnosis and suggest treatment by remote control. It was then that I felt the futility of attempting a diagnosis without seeing, examining, talking to the patient.

I would guess (and that is all it is) that the dentist did not know that the patient and her mother are both disinclined to eat citrus fruits; that he did not know that the mother has worn an upper denture since her mid-forties and that her father was only slightly older when he became edentulous; that the young woman had recently returned from a European trip where she probably aggravated her basic

(*Continued on page* 473)

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FIG. A FIG. B FIG. C

The function of gingival bevels

Fig. A shows a flat gingival seat which presents short, unsupported enamel rods which may fall away after the impression is taken or during seating of the inlay.

Fig. B indicates use of a reverse bevel which contributes to the resistance form and helps to guide the inlay to a positive seat during cementation.

Fig. C, the more usual method, shows a bevel of the gingival seat. This prevents the leaving of any loose ends of enamel rods which may fall away while seating the restoration or after the restoration is in service. Here, no free ends of enamel rods are presented along the gingival margin.

(Prepared under the direction of competent dental authority.)

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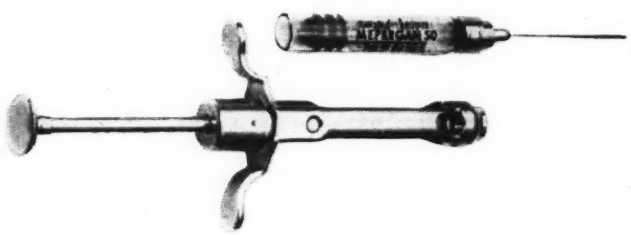

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avitaminosis because her budget was limited. These are certainly all diagnostic clues and should be considered in any treatment program.

The x-rays that I saw showed minimal destruction of the supporting bone. No x-ray, however, can show the quality of the soft tissues—the degree and extent of inflammation, the mobility of the teeth in their sockets, the type of exudate, the odor of the breath. These, too, are all diagnostic clues that should be evaluated before any treatment program is proposed.

My clinical impression was that the young woman should receive the treatment of gradualism. Treatment should begin with simple procedures: careful scaling and curettage, adjustment of the occlusion if that is necessary, basic instruction in home care and nutrition. If these remedies are ineffective—and only then—should the resort to surgery be considered. To *start* treatment with surgery when no grave emergency is concerned is a method of putting last things first. To place the last in the position of first things is a violation of logic and biology.

A proper understanding of biologic process seems to be lacking in our training. Or, stated in terms of the metaphysician, we lack a basic philosophy of life forces. The human organism is in constant struggle to maintain homeostasis, to maintain balance, to survive. We should do nothing in our treatment that is contrary to these life forces. We should not forget the human being within the patient.

In my quandary over this patient and her problem I was heartened to read in the excellent journal *Postgraduate Medicine* an excerpt from an article by S. R. Wilson that originally appeared in the *Journal of Medical Education*:

"The practitioner who is born with clinical sense is in the same category as the good farmer, who, using eyes, ears, nose, and touch, can size up the state of his beasts. The developing of clinical sense or, perhaps, sensitivity, is possible enough, just as Wordsworth trained himself to become a poet; but the danger of losing even any inherent quality in this direction has steadily increased with the growth of x-ray and laboratory techniques. Hospital residence magnifies this danger, unless the young intern hears some fundamental wisdom from his senior colleagues. But his senior colleagues themselves have often renounced their birthright and depend too much on the tests of the titrater and the shadows of Roentgen. Even if, as a medical student, he were taught the fundamentals of clinical examination, the man going into general practice will almost certainly have to relearn them and make his own working rules, by which to measure up his patients' state. This is a personal matter, but of such importance that it is being emphasized. To look at the tongue, sure reflector of the stomach, to feel the pulse and, while holding the hand, test both heart and personality, to look at the eyes and gauge the nervous system, to feel the skin and estimate the tissue's texture—these, surely, are the primary factors of our clinical examination, and are the basic guides in determining the seriousness or otherwise of the case before us."

In somewhat different vein and with

(*Continued on page* 475)

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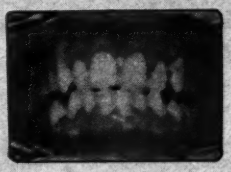

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1. *The New York Hospital—Cornell Medical Center, Presented as a Scientific Exhibit at the American Dental Association Annual Session, November 1957.*
2. *Behrman, S. J.; Fater, S. G.; Grodberg, D. L.; An Evaluation of Oxygenating Agents in the Treatment of Gingival Inflammation. J. Dent. Med., Oct. 1958.*

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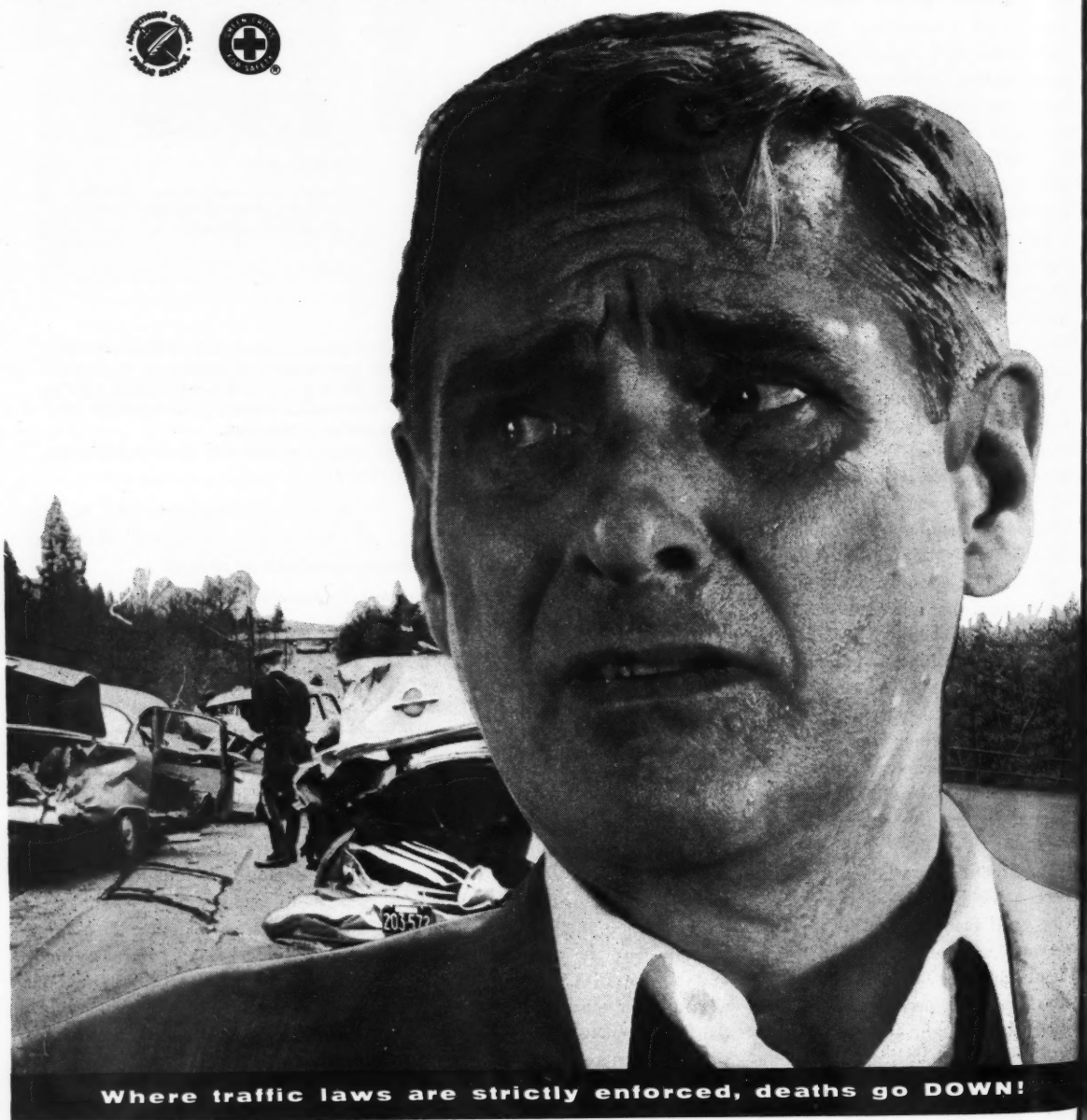

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a different emphasis an article in the British *Lancet* expressed a philosophy of medicine in a "Story of Creation" style:

"In the beginning the Creator made the doctor. He made him generous and jealous, logical and inexact, faithful and cynical.

"On the second day He created the Bacteria and said: 'The hemolytic streptococci shall destroy the people but the nonhemolytic ones shall pass them by as a breeze over the waving corn, and the non-lactose-fermenters shall be a scourge on the innocents but the lactose fermenters shall be the strength of their digestion.'

"On the third day He created the Vitamins and Hormones and said: 'Behold, the Vitamins and Hormones, how they toil. They toil in the bright rays of the sun and in the dark folds of the seed and woe unto him that hath them not.'

"On the fourth day He created the Antibiotics and said: 'This shall be a sign for you, a universal remedy, infallible, invincible.' But Resistance thwarted them.

"On the fifth day He created the Psychotherapists and said: 'I leave it to you.' And they arose and built themselves little temples and the people lay down and worshipped them.

"On the sixth day He created the Will-to-Live and said: 'Let the patient live.'

"On the seventh day He looked on His handiwork and saw that every good had an antagonist and every ill had an antidote and every antidote had a neutralizer. He was satisfied that none would win or lose and that all would live and die."

People come to us for relief of disease. They are not particularly interested in our philosophy, unless that philosophy is meaningful in the diagnosis and treatment of their disease. In addition to skill and professional competence our patients expect us to be honest in our judgments. We cannot judge with wisdom unless we possess more than fragmented knowledge. All types of knowledge and all forms of culture, in turn, sharpen our clinical sense.

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ORAL DIAGNOSTIC SIGNS has been prepared by Edward J. Ryan, D.D.S., Editor of Dental Digest, and E. Cheraskin, M.D., D.M.D., Professor of Oral Medicine, University of Alabama.

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